WEST Search History

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DATE: Monday, September 27, 2004

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		DB=PGPB; THES=ASSIGNEE; PLUR=YES; OP=ADJ	
☐	L6	(lipase or phospholipase or cutinase) same chemically modif$6 same hydrophobic	0
☐	L5	(lipase or phospholipase or cutinase) same (chemically modif$6 or mutant or variant) same hydrophobic	5
		DB=USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ	
☐	L4	(lipase or phospholipase or cutinase) same (chemically modif$6 or mutant or variant) same hydrophobic	26
☐	L3	(lipase or phospholipase or cutinase) same chemically modif$6 same hydrophobic	5
☐	L2	L1 and hydrophobic	36
☐	L1	(lipase or phospholipase or cutinase) same chemically modif$6	95

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Search Results - Record(s) 1 through 20 of 26 returned.

☐ 1. Document ID: US 6630171 B1

Using default format because multiple data bases are involved.

L4: Entry 1 of 26 File: USPT Oct 7, 2003

US-PAT-NO: 6630171
DOCUMENT-IDENTIFIER: US 6630171 B1

TITLE: Particles based on polyamino-acid(s) and methods for preparing same

DATE-ISSUED: October 7, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Huille; Sylvain	Bordeaux			FR
Nicolas; Florence	Genas			FR
Brison; Nathan	Millery			FR
Soula; Gerard	Meyzieu			FR

US-CL-CURRENT: 424/489; 424/130.1, 424/184.1, 424/422, 424/484, 424/486, 424/499, 424/502, 514/2, 514/3, 514/54, 514/56

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw D

☐ 2. Document ID: US 6624129 B1

L4: Entry 2 of 26 File: USPT Sep 23, 2003

US-PAT-NO: 6624129
DOCUMENT-IDENTIFIER: US 6624129 B1

TITLE: Lipase variant

DATE-ISSUED: September 23, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Borch; Kim	Copenhagen			DK
Vind; Jesper	Lyngby			DK
Svendsen; Allan	Horsholm			DK
Halkier; Dorte Aaby	Birkerod			DK
Patkar; Shamkant Anant	Lyngby			DK

Bojsen; Kirsten Hellerup DK

US-CL-CURRENT: 510/226; 435/196, 435/198, 435/252.3, 435/320.1, 435/69.1, 510/305, 510/392, 530/350, 536/23.2, 536/23.7

ABSTRACT:

The present invention relates to lipase variants having at least 90% identity to the wild-type lipase derived from Humicola lanuginosa strain DSM 4109 and having a certain distribution of electrically charged amino acids. The present invention also relates to detergents comprising such lipases.

24 Claims, 4 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 4

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. D

☐ 3. Document ID: US 6586185 B2

L4: Entry 3 of 26 File: USPT Jul 1, 2003

US-PAT-NO: 6586185
DOCUMENT-IDENTIFIER: US 6586185 B2
**** See image for Certificate of Correction ****

TITLE: Use of polypeptides or nucleic acids for the diagnosis or treatment of skin disorders and wound healing and for the identification of pharmacologically active substances

DATE-ISSUED: July 1, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wolf; Eckard	Oberschleissheim			DE
Werner; Sabine	Zurich			CH
Halle; Jorn-Peter	Penzberg			DE
Regenbogen; Johannes	Martinsried			DE
Goppelt; Andreas	Munchen			DE

US-CL-CURRENT: 435/6; 424/9.1, 514/44

ABSTRACT:

Method of using of polypeptides or nucleic acids encoding these for the diagnosis and/or prevention and/or treatment of diseases of skin cells and/or of wound healing and/or its pathological disorders, and their use for the identification of pharmacologically active substance.

3 Claims, 3 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 3

☐ 4. Document ID: US 6551607 B1

L4: Entry 4 of 26 File: USPT Apr 22, 2003

US-PAT-NO: 6551607
DOCUMENT-IDENTIFIER: US 6551607 B1
**** See image for Certificate of Correction ****

TITLE: Method for sequestration of skin irritants with substrate compositions

DATE-ISSUED: April 22, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Minerath, III; Bernard Joseph	Oshkosh	WI		
Otts; David Roland	Appleton	WI		
Huard; Linda Susan	Appleton	WI		
Tyrrell; David John	Appleton	WI		
DiLuccio; Robert Cosmo	Alpharetta	GA		
Akin; Frank Jerrel	Marietta	GA		
Buhrow; Chantel Spring	Weyauwega	WI		
Everhart; Dennis Stein	Alpharetta	GA		
Nelson; Brenda Marie	Appleton	WI		
Shanklin; Gary Lee	Appleton	WI		

US-CL-CURRENT: 424/402; 424/400, 424/401, 424/443, 424/78.08

ABSTRACT:

The present invention relates to a method of sequestering skin irritants with a skin irritant sequestering composition comprising a substrate, a hydrophilic skin irritant sequestering agent and a hydrophobic skin irritant sequestering agent. In one embodiment the sequestering agents are comprised of modified and non-modified clays. The present invention further also provides a method of sequestering skin irritants comprising administering to the stratum corneum of an individual's skin a skin irritant sequestering composition comprising a substrate, a skin irritant sequestering amount of a combination of hydrophilic and hydrophobic skin irritant sequestering agents. In one embodiment the skin irritants are bound to sequestering agents present on a substrate. In another embodiment the skin irritants are bound to sequestering agents present on the skin.

57 Claims, 22 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 13

☐ 5. Document ID: US 6521242 B1

L4: Entry 5 of 26 File: USPT Feb 18, 2003

US-PAT-NO: 6521242
DOCUMENT-IDENTIFIER: US 6521242 B1

TITLE: Method for sequestration of nasal secretion skin irritants with facial tissue

DATE-ISSUED: February 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Minerath, III; Bernard Joseph	Oshkosh	WI		
Nelson; Brenda Marie	Appleton	WI		
Otts; David Roland	Appleton	WI		
Huard; Linda Susan	Appleton	WI		
Tyrrell; David John	Appleton	WI		
Shanklin; Gary Lee	Appleton	WI		

US-CL-CURRENT: 424/402; 424/400, 424/401, 424/78.08

ABSTRACT:

The present invention provides a method of sequestering nasal secretion skin irritants comprising administering to the stratum corneum of an individual's skin a facial tissue comprising a tissue substrate, a nasal secretion skin irritant sequestering amount of a combination of hydrophilic and hydrophobic nasal secretion skin irritant sequestering agents. In one embodiment the sequestering agents are comprised of modified and non-modified clays. In one embodiment the skin irritants are bound to sequestering agents present on a substrate. In another embodiment the skin irritants are bound to sequestering agents present on the skin.

23 Claims, 18 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 9

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw. D

☐ 6. Document ID: US 6521241 B1

L4: Entry 6 of 26 File: USPT Feb 18, 2003

US-PAT-NO: 6521241
DOCUMENT-IDENTIFIER: US 6521241 B1

TITLE: Substrate composition for sequestration of skin irritants

DATE-ISSUED: February 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Minerath, III; Bernard Joseph	Oshkosh	WI		
Otts; David Roland	Appleton	WI		
Huard; Linda Susan	Appleton	WI		
Tyrrell; David John	Appleton	WI		
DiLuccio; Robert Cosmo	Alpharetta	GA		
Akin; Frank Jerrel	Marietta	GA		
Buhrow; Chantel Spring	Weyauwega	WI		
Everhart; Dennis Stein	Alpharetta	GA		
Nelson; Brenda Marie	Appleton	WI		
Shanklin; Gary Lee	Appleton	WI		

US-CL-CURRENT: 424/402; 424/400, 424/401, 424/443, 424/78.08

ABSTRACT:

The present invention relates to a skin irritant sequestering composition comprising a tissue substrate, a hydrophilic skin irritant sequestering agent and a hydrophobic skin irritant sequestering agent. In one embodiment the sequestering agents are comprised of modified and non-modified clays. In one embodiment, the skin irritants are bound to sequestering agents present on a substrate. In another embodiment the skin irritants are bound to sequestering agents present on the skin.

49 Claims, 22 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 13

☐ 7. Document ID: US 6521240 B1

L4: Entry 7 of 26 File: USPT Feb 18, 2003

US-PAT-NO: 6521240
DOCUMENT-IDENTIFIER: US 6521240 B1

TITLE: Facial tissue composition for sequestration of nasal secretion skin irritants

DATE-ISSUED: February 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Minerath, III; Bernard Joseph	Oshkosh	WI		
Nelson; Brenda Marie	Appleton	WI		
Otts; David Roland	Appleton	WI		
Huard; Linda Susan	Appleton	WI		
Tyrrell; David John	Appleton	WI		
Shanklin; Gary Lee	Appleton	WI		

US-CL-CURRENT: 424/402; 424/400, 424/401, 424/443, 424/78.08

ABSTRACT:

Facial tissue is provided comprising a tissue substrate, a hydrophilic nasal secretion skin irritant sequestering agent and a hydrophobic nasal secretion skin irritant sequestering agent. In one embodiment the sequestering agents are comprised of modified and non-modified clays. In one embodiment the skin irritants are bound to sequestering agents present on a substrate. In another embodiment the skin irritants are bound to sequestering agents present on the skin.

25 Claims, 18 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 9

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

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☐ 8. Document ID: US 6440922 B1

L4: Entry 8 of 26 File: USPT Aug 27, 2002

US-PAT-NO: 6440922
DOCUMENT-IDENTIFIER: US 6440922 B1

TITLE: Detergent composition comprising zeolite and amylase enzyme

DATE-ISSUED: August 27, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Garnett; Carolyn Jayne	Brussels			BE
Clare; Jonathan Richard	Newcastle upon Tyne			GB
Wauben; Johan Juliaan Serafin	Lint			BE

US-CL-CURRENT: 510/392; 510/309, 510/312, 510/313, 510/320, 510/321, 510/334, 510/507, 510/530, 510/532

ABSTRACT:

A detergent composition comprises a zeolite builder having a particle size, expressed as a d.sub.50 value, of less than 1.0 micrometers, an amylase enzyme, and an alkoxylated nonionic surfactant having a hydrophilic lipophilic balance value of less than 9.5 selected from the group consisting of alkoxylated adducts of fatty alcohols containing an average of less than 5 alkylene oxide groups per molecule. The detergent composition has been found to reduce white residue formation on fabrics washed with detergent containing small particle size zeolite.

16 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

☐ 9. Document ID: US 6156552 A

L4: Entry 9 of 26 File: USPT Dec 5, 2000

US-PAT-NO: 6156552
DOCUMENT-IDENTIFIER: US 6156552 A

TITLE: Lipase variants

DATE-ISSUED: December 5, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Okkels; Jens Sigurd	Vedb.ae butted.k			DK
Fukuyama; Shiro	Chiba			JP
Matsui; Tomoko	Chiba			JP
Yoneda; Tadashi	Chiba			JP

US-CL-CURRENT: 435/198; 435/183, 435/252.2, 435/320.1, 435/69.1, 585/455

ABSTRACT:

The invention provides variant lipases with improved washing performance, including good performance in washing with a detergent having a high content of anionic surfactant at low washing temperature at a short washing time. More particularly, the invention relates to variants of the wild-type lipase from Pseudomonas sp. strain SD 705, deposited as FERM BP-4772.

2 Claims, 10 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 10

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw

☐ 10. Document ID: US 6074863 A

L4: Entry 10 of 26 File: USPT Jun 13, 2000

US-PAT-NO: 6074863
DOCUMENT-IDENTIFIER: US 6074863 A

TITLE: C. antarctica lipase variants

DATE-ISSUED: June 13, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Svendsen; Allan	Birker.o slashed.d			DK
Pathar; Shamkant Anant	Lyngby			DK
Egel-Mitani; Michi	Vedb.ae butted.k			DK

Borch; Kim	Copenhagen	DK
Clausen; Ib Groth	Hiller.o slashed.d	DK
Hansen; Mogens Trier	Lynge	DK

US-CL-CURRENT: 435/198; 435/134, 435/252.3, 435/320.1, 536/23.2

ABSTRACT:

A lipase variant of a parent lipase comprising a trypsin-like catalytic triad including an active serine located in a predominantly hydrophobic, elongated binding pocket of the lipase molecule and, located in a critical position of a lipid contact zone of the lipase structure, an amino acid residue different from an aromatic amino acid residue, which amino acid residue interacts with a lipid substrate at or during hydrolysis, in which lipase variant said amino acid residue has been replaced by an aromatic amino acid residue so as to confer to the variant an increased specific activity as compared to that of the parent lipase. The parent lipase may be a C. antarctica lipase A essentially free from other substances from C. antarctica, which comprises the amino acid sequence shown in SEQ ID No. 2, or a variant of said lipase which (1) has lipase activity, (2) reacts with an antibody reactive with at least one epitope of C. antarctica lipase A having th eamino acid sequence SEQ ID No. 2, and/or (3) is encoded by a nucleotide sequence which hybridizes with an oligonucleotide probe prepared on the basis of the full or partial nucleotide sequence shown in SEQ ID No. 1 encoding the C. antarctica lipase A.

28 Claims, 3 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 3

☐ 11. Document ID: US 6020180 A

L4: Entry 11 of 26 File: USPT Feb 1, 2000

US-PAT-NO: 6020180
DOCUMENT-IDENTIFIER: US 6020180 A

TITLE: C. antarctica lipase and lipase variants

DATE-ISSUED: February 1, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Svendsen; Allan	Birker.o slashed.d			DK
Patkar; Shamkant Anant	Lyngby			DK
Egel-Mitani; Michi	Vedb.ae butted.k			DK
Borch; Kim	Copenhagen			DK
Clausen; Ib Groth	Hiller.o slashed.d			DK
Hansen; Mogens Trier	Lynge			DK

US-CL-CURRENT: 435/198; 435/252.3, 435/254.2, 435/254.3, 435/267, 435/320.1,

536/23.2

ABSTRACT:

A DNA sequence encoding a lipase having the amino acid sequence shown in SEQ ID NO:2. The lipase has a trypsin-like catalytic triad including an active serine located in a predominantly hydrophobic, elongated binding pocket of the lipase molecule and, located in a critical position of a lipid contact zone of the lipase structure, an amino acid residue different from an aromatic amino acid residue, which amino acid residue interacts with a lipid substrate at or during hydrolysis, in which lipase variant of the amino acid residue has been replaced by an aromatic amino acid residue so as to confer to the variant an increased specific activity as compared to that of the parent lipase.

11 Claims, 3 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 3

☐ 12. Document ID: US 6017866 A

L4: Entry 12 of 26 File: USPT Jan 25, 2000

US-PAT-NO: 6017866
DOCUMENT-IDENTIFIER: US 6017866 A

TITLE: Lipases with improved surfactant resistance

DATE-ISSUED: January 25, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Aehle; Wolfgang	Delft			NL
Gerritse; Gijsbert	Delft			NL
Lenting; Hermanus B. M.	Delft			NL

US-CL-CURRENT: 510/320; 435/198, 435/252.3, 435/320.1, 435/874, 510/226, 510/305, 510/326, 510/392, 530/350, 536/23.2, 536/23.7

ABSTRACT:

The present invention provides mutant lipases which retain lipase activity, but have improved surfactant resistance and are thus highly advantageous for use in detergent compositions. Preferred lipases of this type include modified functional forms of a lipase of Pseudomonas alcaligenes having one or more amino acid substitutions at or near the surface of the lipase which effect interaction of the hydrophobic portions of surfactant molecules with initiation sites on the enzyme for surfactant denaturation.

17 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 13. Document ID: US 5892013 A

L4: Entry 13 of 26 File: USPT Apr 6, 1999

S-PAT-NO: 5892013
OCUMENT-IDENTIFIER: US 5892013 A

ITLE: Lipase variants

ATE-ISSUED: April 6, 1999

NVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
vendsen; Allan	Birker.o slashed.d			DK
atkar; Shamkant Anant	Lyngby			DK
ormsen; Erik	Virum			DK
lausen; Ib Groth	Hiller.o slashed.d			DK
kkels; Jens Sigurd	Frederiksberg			DK
hellersen; Marianne	Frederiksberg			DK

S-CL-CURRENT: 536/23.2; 435/198, 435/252.3, 435/320.1, 435/69.1, 536/23.7

BSTRACT:

he present invention relates to lipase variants which exhibit improved properties, etergent compositions comprising said lipase variants, DNA constructs coding for aid lipase variants, and methods of making said lipase variants.

9 Claims, 10 Drawing figures
xemplary Claim Number: 1
umber of Drawing Sheets: 10

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 14. Document ID: US 5869438 A

L4: Entry 14 of 26 File: USPT Feb 9, 1999

-PAT-NO: 5869438
CUMENT-IDENTIFIER: US 5869438 A

TLE: Lipase variants

TE-ISSUED: February 9, 1999

VENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Svendsen; Allan	Birker.o slashed.d			DK
Patkar; Shamkant Anant	Lyngby			DK
Gormsen; Erik	Virum			DK
Okkels; Jens Sigurd	Frederiksberg			DK
Thellersen; Marianne	Frederiksberg			DK

US-CL-CURRENT: 510/226; 435/196, 435/198, 435/252.3, 435/320.1, 435/69.1, 510/305, 510/392, 530/350, 536/23.2, 536/23.7

ABSTRACT:

The present invention relates to lipase variants which exhibit improved properties, detergent compositions comprising said lipase variants, DNA constructs coding for said lipase variants, and methods of making said lipase variants.

51 Claims, 10 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 10

☐ 15. Document ID: US 5622843 A

L4: Entry 15 of 26 File: USPT Apr 22, 1997

US-PAT-NO: 5622843
DOCUMENT-IDENTIFIER: US 5622843 A

TITLE: Phospholipid transfer proteins and DNA encoding them

DATE-ISSUED: April 22, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Day; Joseph R.	Brier	WA		
Albers; John J.	Seattle	WA		
Lofton-Day; Catherine E.	Brier	WA		
Adolphson; Janet L.	Mountlake Terrace	WA		

US-CL-CURRENT: 435/69.6; 435/69.1, 536/23.5

ABSTRACT:

Isolated polynucleotide molecules encoding mammalian phospholipid transfer proteins (PLTP) and phospholipid transfer protein polypeptides are disclosed. The DNA molecules are transformed or transfected into host cells and the cells cultured to produce recombinant PLTP and PLTP polypeptides. PLTP and PLTP polypeptides may be combined with a pharmaceutically acceptable vehicle and administered to patients to regulate phospholipid transfer activity and thereby obtain a more favorable lipoprotein profile in the blood. The proteins and polypeptides may also be used

within methods to measure phospholipid transfer activity or identify inhibitors of phospholipid transfer activity.

8 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 16. Document ID: US 5614189 A

L4: Entry 16 of 26 File: USPT Mar 25, 1997

US-PAT-NO: 5614189
DOCUMENT-IDENTIFIER: US 5614189 A

TITLE: Recombinantly produced lipases for therapeutical treatment

DATE-ISSUED: March 25, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Huge-Jensen; Birgitte	Jaegerspris			DK

US-CL-CURRENT: 424/94.6; 424/94.2, 435/195

ABSTRACT:

This invention relates to lipase containing pharmaceutical compositions comprising a microbial, 1, 3-position specific, crystalline lipase and to methods for treatment or prophylaxis of lipase deficiency in mammals.

14 Claims, 7 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 7

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 17. Document ID: US 5610019 A

L4: Entry 17 of 26 File: USPT Mar 11, 1997

US-PAT-NO: 5610019
DOCUMENT-IDENTIFIER: US 5610019 A

TITLE: Methods of detecting phospholipid transfer activity and kits therefor

DATE-ISSUED: March 11, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY

Day; Joseph R.	Brier	WA
Albers; John J.	Seattle	WA
Lofton-Day; Catherine E.	Brier	WA
Adolphson; Janet L.	Mountlake Terrace	WA

US-CL-CURRENT: 435/7.1; 435/12, 435/183, 435/4, 435/69.1, 435/69.6, 435/7.4, 435/7.6, 435/7.92

ABSTRACT:

Isolated polynucleotide molecules encoding mammalian phospholipid transfer proteins (PLTP) and phospholipid transfer protein polypeptides are disclosed. The DNA molecules are transformed or transfected into host cells and the cells cultured to produce recombinant PLTP and PLTP polypeptides. PLTP and PLTP polypeptides may be combined with a pharmaceutically acceptable vehicle and administered to patients to regulate phospholipid transfer activity and thereby obtain a more favorable lipoprotein profile in the blood. The proteins and polypeptides may also be used within methods to measure phospholipid transfer activity or identify inhibitors of phospholipid transfer activity.

4 Claims, 0 Drawing figures
Exemplary Claim Number: 1

☐ 18. Document ID: WO 3066873 A1

L4: Entry 18 of 26 File: EPAB Aug 14, 2003

PUB-NO: WO003066873A1
DOCUMENT-IDENTIFIER: WO 3066873 A1
TITLE: ESTERASES WITH LIPASE ACTIVITY

PUBN-DATE: August 14, 2003

INVENTOR-INFORMATION:

NAME	COUNTRY
OAKESHOTT, JOHN GRAHAM	AU
DEVONSHIRE, ALAN	GB
COPPIN, CHRISTOPHER WAYNE	AU
HEIDARI, RAMA	AU
DORRIAN, SUSAN JANE	AU
RUSSELL, ROBYN JOYCE	AU

INT-CL (IPC): C12 P 7/62; C12 N 9/18
EUR-CL (EPC): C12N009/18; C12N009/20, C12P007/02 , C12P007/40 , C12P041/00

ABSTRACT:

CHG DATE=20031203 STATUS=O>The present invention relates to the use of insect esterases or lipases, or mutants thereof, as catalysts in biotransformation processes. The present invention may have application in any process involving

hydrolysis, esterification, transesterification, interesterification or acylation reactions. The invention also has application in the enzymatic resolution of compounds to produce optically active compounds and has particular, but not exclusive, application to substrates having a hydrophobic moiety such as pyrethroids and fatty acid esters.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 19. Document ID: WO 9530744 A2

L4: Entry 19 of 26 File: EPAB Nov 16, 1995

PUB-NO: WO009530744A2
DOCUMENT-IDENTIFIER: WO 9530744 A2
TITLE: LIPASES WITH IMPROVED SURFACTANT RESISTANCE

PUBN-DATE: November 16, 1995

INVENTOR-INFORMATION:

NAME	COUNTRY
AEHLE, WOLFGANG	NL
GERRITSE, GIJSBERT	NL
LENTING, HERMANUS BERNARDUS MAR	NL

INT-CL (IPC): C12 N 9/20; C11 D 3/386
EUR-CL (EPC): C11D003/386; C12N009/20

ABSTRACT:

The present invention provides mutant lipases which retain lipase activity, but have improved surfactant resistance and are thus highly advantageous for use in detergent compositions. Preferred lipases of this type include modified functional forms of a lipase of Pseudomonas alcaligenes having one or more amino acid substituents at or near the surface which effect interaction of the hydrophobic portions of surfactant molecules with initiation sites on the enzyme for surfactant denaturation.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 20. Document ID: WO 9401541 A1

L4: Entry 20 of 26 File: EPAB Jan 20, 1994

PUB-NO: WO009401541A1
DOCUMENT-IDENTIFIER: WO 9401541 A1
TITLE: C. ANTARCTICA LIPASE AND LIPASE VARIANTS

PUBN-DATE: January 20, 1994

INVENTOR-INFORMATION:

NAME	COUNTRY
SVENDSEN, ALLAN	DK
PATHAR, SHAMKANT ANANT	DK
EGEL-MITANI, MICHI	DK
BORCH, KIM	DK
CLAUSEN, IB GROTH	DK
HANSEN, MOGENS TRIER	DK

US-CL-CURRENT: 435/198
INT-CL (IPC): C12N 9/20; C12N 15/55
EUR-CL (EPC): C12N009/20; D21H021/02

ABSTRACT:

CHG DATE=19990617 STATUS=O>A lipase variant of a parent lipase comprising a trypsin-like catalytic triad including an active serine located in a predominantly hydrophobic, elongated binding pocket of the lipase molecule and, located in a critical position of a lipid contact zone of the lipase structure, an amino acid residue different from an aromatic amino acid residue, which amino acid residue interacts with a lipid substrate at or during hydrolysis, in which lipase variant said amino acid residue has been replaced by an aromatic amino acid residue so as to confer to the variant an increased specific activity as compared to that of the parent lipase. The parent lipase may be a C. antarctica lipase A essentially free from other substances from C. antarctica, which comprises the amino acid sequence shown in SEQ ID No. 2, or a variant of said lipase which (1) has lipase activity, (2) reacts with an antibody reactive with at least one epitope of C. antarctica lipase A having th eamino acid sequence SEQ ID No. 2, and/or (3) is encoded by a nucleotide sequence which hybridizes with an oligonucleotide probe prepared on the basis of the full or partial nucleotide sequence shown in SEQ ID No. 1 encoding the C. antarctica lipase A.

Terms	Documents
(lipase or phospholipase or cutinase) same (chemically modif$6 or mutant or variant) same hydrophobic	26

Hit List

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Search Results - Record(s) 1 through 5 of 5 returned.

☐ 1. Document ID: US 20040156826 A1

Using default format because multiple data bases are involved.

L5: Entry 1 of 5 File: PGPB Aug 12, 2004

PGPUB-DOCUMENT-NUMBER: 20040156826
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040156826 A1

TITLE: Treatment of patients with multiple sclerosis based on gene expression changes in central nervous system tissues

PUBLICATION-DATE: August 12, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Dangond, Fernando	Newton	MA	US	
Hwang, Daehee	Seattle	WA	US	
Gullans, Steven R.	Natick	MA	US	

US-CL-CURRENT: 424/93.2; 424/85.6, 514/12

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 2. Document ID: US 20040152180 A1

L5: Entry 2 of 5 File: PGPB Aug 5, 2004

PGPUB-DOCUMENT-NUMBER: 20040152180
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040152180 A1

TITLE: Lipolytic enzyme variant

PUBLICATION-DATE: August 5, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Minning, Steffan	Frederiksberg C		DK	
Vind, Jesper	Vaerlose		DK	
Glad, Sanne O. Schroder	Ballerup		DK	
Danielsen, Steffen	Kobenhavn O		DK	

Borch, Kim Birkerod DK

US-CL-CURRENT: 435/196; 435/198

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 3. Document ID: US 20040088764 A1

L5: Entry 3 of 5 File: PGPB May 6, 2004

PGPUB-DOCUMENT-NUMBER: 20040088764
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040088764 A1

TITLE: Processes and vectors for producing transgenic plants

PUBLICATION-DATE: May 6, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Gleba, Yuri	Halle		DE	
Klimyuk, Victor	Halle		DE	
Benning, Gregor	Halle		DE	
Eliby, Serik	Halle		DE	

US-CL-CURRENT: 800/288; 435/468

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 4. Document ID: US 20040053245 A1

L5: Entry 4 of 5 File: PGPB Mar 18, 2004

PGPUB-DOCUMENT-NUMBER: 20040053245
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040053245 A1

TITLE: Novel nucleic acids and polypeptides

PUBLICATION-DATE: March 18, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Tang, Y. Tom	San Jose	CA	US	
Liu, Chenghua	San Jose	CA	US	
Drmanac, Radoje T.	Palo Alto	CA	US	

US-CL-CURRENT: 435/6; 435/183, 435/320.1, 435/325, 435/69.1, 530/350, 530/388.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 5. Document ID: US 20030144165 A1

L5: Entry 5 of 5 File: PGPB Jul 31, 2003

PGPUB-DOCUMENT-NUMBER: 20030144165
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030144165 A1

TITLE: Lipolytic enzyme variant

PUBLICATION-DATE: July 31, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Roggen, Erwin Ludo	Lyngby		DK	

US-CL-CURRENT: 510/226; 426/20, 435/198, 435/254.2, 435/320.1, 435/69.1, 510/320

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
(lipase or phospholipase or cutinase) same (chemically modif$6 or mutant or variant) same hydrophobic	5

Display Format: - Change Format

Previous Page Next Page Go to Doc#

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=> file .nash
=> s humicola lanuginosa and lipase
L1          44 FILE MEDLINE
L2         193 FILE CAPLUS
L3         160 FILE SCISEARCH
L4          35 FILE LIFESCI
L5          92 FILE BIOSIS
L6          75 FILE EMBASE

TOTAL FOR ALL FILES
L7         599 HUMICOLA LANUGINOSA AND LIPASE

=> s l7 and (crystal or three dimensional or x-ray)
TOTAL FOR ALL FILES
L14         93 L7 AND (CRYSTAL OR THREE DIMENSIONAL OR X-RAY)

=> dup rem l14
PROCESSING COMPLETED FOR L14
L15         52 DUP REM L14 (41 DUPLICATES REMOVED)

=> d ibib abs 1-52

L15  ANSWER 1 OF 52  SCISEARCH  COPYRIGHT (c) 2004 The Thomson Corporation.  on
     STN
ACCESSION NUMBER:    2004:694976  SCISEARCH
THE GENUINE ARTICLE: 841XG
TITLE:               Might the kinetic behavior of hormone-sensitive
                     lipase reflect the absence of the lid domain?
AUTHOR:              Ben Ali Y; Chahinian H; Petry S; Muller G; Carriere F;
                     Verger R; Abousalham A (Reprint)
CORPORATE SOURCE:    CNRS, UPR 9025, 31 Chemin Joseph Aiguier, F-13402
                     Marseille 20, France (Reprint); CNRS, UPR 9025, F-13402
                     Marseille 20, France; Aventis Germany, D-65926 Frankfurt,
                     Germany
COUNTRY OF AUTHOR:   France; Germany
SOURCE:              BIOCHEMISTRY, (27 JUL 2004) Vol. 43, No. 29, pp. 9298-9306

                     Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW,
                     WASHINGTON, DC 20036 USA.
                     ISSN: 0006-2960.
DOCUMENT TYPE:       Article; Journal
LANGUAGE:            English
REFERENCE COUNT:     60
                    *ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS*
AB       Hormone-sensitive lipase (HSL) is thought to contribute
     importantly to the mobilization of fatty acids from the triacylglycerols
     (TAGs) stored in adipocytes, providing the main source of energy in
     mammals. To investigate the HSL substrate specificity more closely, we
     systematically assessed the lipolytic activity of recombinant human HSL on
     solutions and emulsions of various vinyl esters and TAG substrates, using
     the pH-stat assay technique. Recombinant human HSL activity on solutions
     of partly soluble vinyl esters or TAG was found to range from 35 to 90% of
     the maximum activity measured with the same substrates in the emulsified
     state. The possible existence of a lipid-water interface due to the
     formation of small aggregates of vinyl esters or TAG in solution may
     account for the HSL activity observed below the solubility limit of the
     substrate. Recombinant human HSL also hydrolyzes insoluble medium- and
     long-chain acylglycerols such as trioctanoylglycerol, dioleoylglycerol,
     and olive oil, and can therefore be classified as a true lipase.
     Preincubation of the recombinant HSL with a serine esterase inhibitor such
     as diethyl p-nitrophenyl phosphate in 1: 100 molar excess leads to
     complete HSL inhibition within 15 min. This result indicates that the
     catalytic serine of HSL is highly reactive and that it is readily
     accessible. Similar behavior was also observed with lipases with
     no lid domain covering their active site, or with a deletion in the lid
     domain. The 3-D structure of HSL, which still remains to be determined,
     may therefore lack the lid domain known to exist in various other
     lipases.
```

L15 ANSWER 2 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2004:549681 SCISEARCH
THE GENUINE ARTICLE: 828IZ
TITLE: Mechanism of enantioselectivity of **lipases** and other synthetically useful hydrolases
AUTHOR: Ema T (Reprint)
CORPORATE SOURCE: Okayama Univ, Fac Engn, Dept Appl Chem, Okayama 7008530, Japan (Reprint)
COUNTRY OF AUTHOR: Japan
SOURCE: CURRENT ORGANIC CHEMISTRY, (JUL 2004) Vol. 8, No. 11, pp. 1009-1025.
Publisher: BENTHAM SCIENCE PUBL LTD, PO BOX 1673, 1200 BR HILVERSUM, NETHERLANDS.
ISSN: 1385-2728.
DOCUMENT TYPE: General Review; Journal
LANGUAGE: English
REFERENCE COUNT: 208
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB **Lipases** are biocatalysts most widely used in organic synthesis. Unusual but attractive feature of **lipases** is that, in addition to high catalytic activity and thermostability in organic solvents, **lipases** show high enantioselectivity and broad substrate specificity simultaneously. They show excellent enantioselectivity especially toward a wide range of secondary alcohols. The mechanistic details of stereoselective organic reactions are relatively well understood, and knowledge has been used to develop new chemical reagents. In contrast, biocatalysts are behind chemical reagents in rational design approaches, which is partly due to the mechanistic ambiguity of enzymatic reactions. The mechanistic aspects of enantioselective biocatalysts are nevertheless becoming clear. This review provides an overview of the studies aimed at understanding the mechanisms of enantioselectivity of synthetically useful hydrolases Such as **lipases**, subtilisins and chymotrypsins toward unnatural chiral substrates. Several methods for addressing the mechanism are introduced: (i) substrate mapping, (ii) **X-ray** crystallographic analysis, (iii) computational calculations, (iv) kinetic analysis, (v) thermodynamic analysis, (vi) site-directed or random mutagenesis, (vii) spectroscopic methods Such as fluorescence, ESR, and mass spectroscopy. Different models and mechanisms proposed so far are selected and explained. The chemical principles revealed by the mechanistic studies will be useful for (i) using the enzymes in organic synthesis efficiently, (ii) altering the features of the enzymes rationally, (iii) utilizing them as a tool for determining the absolute stereochemistry of molecules, and (iv) designing new artificial catalysts mimicking the catalytic machinery of the enzymes.

L15 ANSWER 3 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2004:519331 SCISEARCH
THE GENUINE ARTICLE: 824SZ
TITLE: Use of immobilized **lipases** for **lipase** purification via specific **lipase-lipase** interactions
AUTHOR: Palomo J M; Ortiz C; Fuentes M; Fernandez-Lorente G; Guisan J M; Fernandez-Lafuente R (Reprint)
CORPORATE SOURCE: CSIC, Inst Catalysis, Dept Biocatalisis, Campus UAM Cantoblanco, Madrid 28049, Spain (Reprint); CSIC, Inst Catalysis, Dept Biocatalisis, Madrid 28049, Spain
COUNTRY OF AUTHOR: Spain
SOURCE: JOURNAL OF CHROMATOGRAPHY A, (4 JUN 2004) Vol. 1038, No. 1-2, pp. 267-273.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0021-9673.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 48
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB **Lipase** from Pseudomonas fluorescens (PFL), an enzyme with a great tendency to yield bimolecular aggregates, was immobilized via

multipoint covalent attachment on glyoxyl-agarose in the presence of Triton X-100. This strategy permitted to obtain the enzyme with the active center oriented towards the reaction medium. This immobilized enzyme presents the capacity of specifically adsorbing PFL molecules, that can be easily desorbed by the use of detergents. More interesting, the enzyme was also able to adsorb other **lipases**. That is, the **lipase** from Bacillus thermocatenulatus (BTL2) cloned in Escherichia coli was selectively adsorbed on this immobilized enzyme, enabling a very simple purification strategy. Similar results were achieved with some other **lipases** (those from Rhizomucor miehei (RML), Rhizopus oryzae (ROL), and **Humicola Lanuginosa** (HLL)). In all cases, the enzyme could be easily desorbed by incubation with Triton X-100. The matrix could be used several cycles without any detrimental effect on the adsorption capacity. (C) 2004 Elsevier B.V. All rights reserved.

L15 ANSWER 4 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2003:1020096 SCISEARCH
THE GENUINE ARTICLE: 742RD
TITLE: Time-resolved fluorescence allows selective monitoring of Trp30 environmental changes in the seven-Trp-containing human pancreatic **lipase**
AUTHOR: Ramos P; Coste T; Piemont E; Lessinger J M; Bousquet J A; Chapus C; Kerfelec B; Ferard G; Mely Y (Reprint)
CORPORATE SOURCE: Univ Strasbourg 1, Fac Pharm, UMR 7034 CNRS, Lab Pharmacol & Physicochim Interact Cellulaires, 74 Route Rhin, F-67401 Illkirch Graffenstaden, France (Reprint); Univ Strasbourg 1, Fac Pharm, UMR 7034 CNRS, Lab Pharmacol & Physicochim Interact Cellulaires, F-67401 Illkirch Graffenstaden, France; Fac Med Marseille, U476 INSERM, F-13385 Marseille 5, France; Univ Strasbourg 1, Fac Pharm, U392 INSERM, Lab Biochim Appl, F-67401 Illkirch Graffenstaden, France
COUNTRY OF AUTHOR: France
SOURCE: BIOCHEMISTRY, (4 NOV 2003) Vol. 42, No. 43, pp. 12488-12496.
Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036 USA.
ISSN: 0006-2960.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 43

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Human pancreatic **lipase** (HPL, triacylglycerol acylhydrolase, EC 3.1.1.3) is a carboxyl esterase which hydrolyzes insoluble emulsified triglycerides and is essential for the efficient digestion of dietary fats. Though the **three-dimensional** structure of this enzyme has been determined, monitoring the conformational changes that may accompany the binding of various substrates and inhibitors is still of interest. Because of its sensitivity and ease of use, fluorescence spectroscopy of the intrinsic Trp residues is ideally suited for this purpose. However, the presence of seven Trp residues spread all over the HPL structure renders the interpretation of the fluorescence changes difficult with respect to the identification and location of the conformational or environmental changes taking place at the various Trp residues. In this context, the aim of this work was to investigate the contribution of the individual Trp residues to the fluorescence properties of HPL. To this end, we analyzed the steady-state and time-resolved fluorescence parameters of five single-point mutants in which one Trp residue was substituted with a weakly fluorescent Phe residue. In addition to the Trp residues at positions 30, 86, and 252, strategically located with respect to the active site, we also mutated Trp residues at positions 17 and 402, as representative residues of the HPL N- and C-terminal domains, respectively. Taken together, our data suggested that the solvent-exposed Trp30 residue contributed to at least 44% of the overall fluorescence of wild-type HPL. Moreover, we found that the long-lived fluorescence lifetime (6.77 ns) of wild-type HPL could be specifically attributed to Trp30, a feature that enables selective monitoring of its environmental changes. Additionally, Trp residues at positions 17 and 402 strongly contributed to the 1.61 ns lifetime of HPL, while Trp residues at positions 86 and 252 contributed to the 0.29 ns lifetime.

L15 ANSWER 5 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2003:633636 SCISEARCH
THE GENUINE ARTICLE: 702NV
TITLE: Effects of a fungal **lipase** on membrane organization evaluated by fluorescence polarization
AUTHOR: Cajal Y (Reprint); Busquets M A; Carvajal H; Girona V; Alsina M A
CORPORATE SOURCE: Univ Barcelona, Fac Pharm, Dept Chem Phys, Avn Joan 23 S-N, Glassboro, NJ 08028 USA (Reprint); Univ Barcelona, Fac Pharm, Dept Chem Phys, Glassboro, NJ 08028 USA
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF MOLECULAR CATALYSIS B-ENZYMATIC, (11 JUL 2003) Vol. 22, No. 5-6, pp. 315-328.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 1381-1177.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 38

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Triglyceride **lipase** from Thermomyces lanuginosa (TIL) binds to the non-substrate small (40 nm) unilamelar vesicles of 1,2-dimiristoylglycero-sn-3-phosphoglycerol (DMPG-SUVs) in a catalytically active structure, whereas it adopts a catalytically incompetent form in binding to zwitterionic 1,2-dimiristoylglycero-sn-3-phosphocholine (DMPC-SUVs) or to large (100 nm) unilamelar DMPG (DMPG-LUVs) vesicles. Steady-state anisotropy measurements with probes that localize at different positions in the membrane give information on the effects of TIL (and its mutants) on the mobility of the phospholipids. All TIL mutants insert into the DMPG-SUVs and increase lipid order at the headgroup region and at the hydrophobic core of the lipid bilayer as well. The increase of the rigidity of the membrane that occurs in the gel and liquid **crystal** states, results in an increase of the phase transition temperature (T-m). Kinetic experiments with monolayers of 1,2-dicaprin demonstrate the thermal stability of the enzyme in the range of temperatures of the phase transition. Mutations in the tryptophan (Trp) residues of TIL reduce activity of this enzyme and affect its interaction with the membrane. The membrane insertions of TIL mutants with other than Trp substitutions are much more shallower and produce only small increases of T-m, whereas mutation of lid-located Trp89 or mutation of any other Trp residue (117, 221, 260) result in a deeper penetration and significant increases of the T-m. Lipid dynamics of DMPC-SUVs or DMPG-LUVs are not affected by any of the TIL mutants, despite their strong binding to the lipids revealed by resonance energy transfer (RET). These results are consistent with the **lipase**-lipid penetration model in which the "lid" region of TIL inserts into the highly curved anionic interface, thus stabilizing the "open" or active enzyme conformation, whereas TIL binds to the surface of zwitterionic and large (small curvature) anionic vesicles in a "closed" (or inactive) conformation, without insertion of the lid.

L15 ANSWER 6 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2003:763676 SCISEARCH
THE GENUINE ARTICLE: 716ND
TITLE: Triggering loops and enzyme function: Identification of loops that trigger and modulate movements
AUTHOR: Gunasekaran K; Ma B Y; Nussinov R (Reprint)
CORPORATE SOURCE: NCI, Basic Res Program, SAIC Frederick Inc, Lab Expt & Computat Biol, Bldg 469, Rm 151, Frederick, MD 21702 USA (Reprint); NCI, Basic Res Program, SAIC Frederick Inc, Lab Expt & Computat Biol, Frederick, MD 21702 USA; Tel Aviv Univ, Sackler Sch Med, Sackler Inst Mol Med, Dept Human Genet & Mol Med, IL-69978 Tel Aviv, Israel
COUNTRY OF AUTHOR: USA; Israel
SOURCE: JOURNAL OF MOLECULAR BIOLOGY, (5 SEP 2003) Vol. 332, No. 1, pp. 143-159.
Publisher: ACADEMIC PRESS LTD ELSEVIER SCIENCE LTD, 24-28 OVAL RD, LONDON NW1 7DX, ENGLAND.
ISSN: 0022-2836.

DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 50
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Enzyme function often involves a conformational change. There is a general agreement that loops play a vital role in correctly positioning the catalytically important residues. Nevertheless, predicting the functional loops and most importantly their role in enzyme function remains a difficult task. A major reason for this difficulty is that loops that undergo conformational change are frequently not well conserved in their primary sequence. beta1,4-Galactosyltransferase is one such enzyme. There, the amino acid sequence of a long loop that undergoes a large conformational change upon substrate binding is not well conserved. Our molecular dynamics simulations show that the large conformational change in the long loop is brought about by a second, interacting loop. Interestingly, while the structural change of the second loop is much smaller than that of the long loop, its sequence (particularly glycine residues) is highly conserved. We further examine the generality of the proposition that there are loops that trigger movements but nevertheless show little or no structural changes in **crystals**. We focus on two other enzymes, enolase and **lipase**. We chose these enzymes, since they too undergo conformational change upon ligand binding, however, they have different folds and different functions. Through multiple sets of simulations we show that the conformational change of the functional loop(s) is brought about through communication of flexibility by triggering loops that have several glycine residues. We further propose that similar to the conservation of common favorable fold types and structural motifs, evolution has also conserved common "skillful" mechanisms. Mechanisms may be conserved across different folds, sequences and functions, with adaptation to specific enzymatic roles. (C) 2003 Elsevier Ltd. All rights reserved.

L15 ANSWER 7 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2003:823440 SCISEARCH
THE GENUINE ARTICLE: 724QP
TITLE: Lag phase and hydrolysis mechanisms of triacylglycerol film lipolysis
AUTHOR: Snabe T; Petersen S B (Reprint)
CORPORATE SOURCE: Univ Aalborg, Inst Life Sci, Sect Biostruct & Prot Engn, DK-9000 Aalborg, Denmark (Reprint)
COUNTRY OF AUTHOR: Denmark
SOURCE: CHEMISTRY AND PHYSICS OF LIPIDS, (SEP 2003) Vol. 125, No. 1, pp. 69-82.
Publisher: ELSEVIER SCI IRELAND LTD, CUSTOMER RELATIONS MANAGER, BAY 15, SHANNON INDUSTRIAL ESTATE CO, CLARE, IRELAND.
ISSN: 0009-3084.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 40
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We here present novel insights into the dynamic changes of a nanosized lipid film during enzymatic degradation. When adding an aqueous solution containing a triacylglycerol **lipase** to an approximately 100 nm thin triolein film, which is supported on a hard surface, the film thickness, elasticity, viscosity, and chemical composition were obtained continuously. Both a mechanical technique (quartz **crystal** microbalance with dissipation monitoring) and a spectroscopic technique (attenuated total reflection Fourier transform infrared spectroscopy) were utilised for this study. Detailed data revealed the effects of pH, Ca2+, and catalytic rate on lipolysis, including product release from the film. It was found that under basic conditions and without Ca2+, the lipolytic activity commence instantaneously upon addition of enzyme, whereas product release from the substrate film awaits conditions that favours release. A model for removal of degradation products from the film is introduced, including a novel interpretation of the lag phase phenomenon. (C) 2003 Elsevier Ireland Ltd. All rights reserved.

L15 ANSWER 8 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2002:977212 SCISEARCH
THE GENUINE ARTICLE: 620CZ
TITLE: Interfacial orientation of Thermomyces lanuginosa **lipase** on phospholipid vesicles investigated by electron spin resonance relaxation spectroscopy
AUTHOR: Hedin E M K; Hoyrup P; Patkar S A; Vind J; Svendsen A; Fransson L; Hult K (Reprint)
CORPORATE SOURCE: Stockholm Ctr Phys Astron & Biotechnol, Royal Inst Technol, Dept Biotechnol, SE-10691 Stockholm, Sweden (Reprint); Tech Univ Denmark, Dept Chem, DK-2800 Lyngby, Denmark; Novozymes AS, DK-2880 Bagsvaerd, Denmark
COUNTRY OF AUTHOR: Sweden; Denmark
SOURCE: BIOCHEMISTRY, (3 DEC 2002) Vol. 41, No. 48, pp. 14185-14196.
Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036 USA.
ISSN: 0006-2960.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 62
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The binding orientation of the interfacially activated Thermomyces lanuginosa **lipase** (TLL, EC 3.1.1.3) on phospholipid vesicles was investigated using site-directed spin labeling and electron spin resonance (ESR) relaxation spectroscopy. Eleven TLL single-cysteine mutants, each with the mutation positioned at the surface of the enzyme, were selectively spin labeled with the nitroxide reagent (1-oxyl-2,2,5,5-tetramethyl-Delta(3)-pyrroline-3-methyl) methanethiosulfonate. These were studied together with small unilamellar vesicles (SUV) consisting of 1-palmitoyl-2-oleoyl-sn-glycero-3-phosphatidylglycerol (POPG), to which TLL has previously been shown to bind in a catalytically active form [Cajal, Y., et al. (2000) Biochemistry, 39, 413-423]. The orientation of TLL with respect to the lipid membrane was investigated using, a water-soluble spin relaxation agent. chromium(III) oxalate (Crox), and a recently developed ESR relaxation technique [Lin, Y., et al. (1998) Science 279, 1925-1929], here modified to low microwave amplitude (< 0.36 G). The exposure to Crox for the spin label at the different positions on the surface of TLL was determined in the absence and presence of vesicles. The spin label at positions Gly61-Cys and Thr267-Cys, closest to the active site nucleophile Ser146 of the positions analyzed, displayed the lowest exposure factors to the membrane-impermeable spin relaxant, indicating the proximity to the vesicle surface. As an independent technique, fluorescence spectroscopy was employed to measure fluorescence quenching of dansyl-labeled POPG vesicles as exerted by the protein-bound spin labels. The resulting Stern-Volmer quenching constants showed excellent agreement with the ESR exposure factors. An interfacial orientation of TLL is proposed on the basis of the obtained results.

L15 ANSWER 9 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2002:789459 CAPLUS
DOCUMENT NUMBER: 138:1658
TITLE: Effect of **Lipase** on Different Lipid Liquid Crystalline Phases Formed by Oleic Acid Based Acylglycerols in Aqueous Systems
AUTHOR(S): Borne, Johanna; Nylander, Tommy; Khan, Ali
CORPORATE SOURCE: Physical Chemistry 1, Center for Chemistry and Chemical Engineering, Lund University, Lund, SE-221 00, Swed.
SOURCE: Langmuir (2002), 18(23), 8972-8981
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB This study deals with the interplay between the interfacial structure of lipid liq. cryst. (lc) substrates and the lipolysis rate. Thermomyces (formerly **Humicola**) **lanuginosa lipase** (TLL) was added to lamellar (L.alpha.), reversed bicontinuous cubic (C), and reversed hexagonal (HII) lc phases, based on monoolein (MO), MO-sodium oleate (NaO), MO-oleic acid (OA), and MO-diolein (DO) with water. The changes in self-assembled structure and lipid compn. during lipolytic processes were followed by polarizing microscopy, small-angle **X**-

ray diffraction, and high-performance liq. chromatog. (HPLC). Indeed, the obsd. changes in self-assembled structures could be predicted from either the MO-OA-2H2O ternary phase diagram, where the lipolysis gives rise to a transition of C .fwdarw. HII .fwdarw. micellar cubic (Cmic) .fwdarw. reversed micellar phase + dispersion, or the MO-NaO-2H2O ternary phase diagram, where the corresponding sequence is L.alpha. .fwdarw. HI. These observations are discussed in terms of the degree of protonation of the fatty acid. The specific activity of TLL on the CD and OA-HII samples as detd. from the lipolysis rate was found to be the similar under the employed exptl. conditions. The HPLC data showed that the ratio between the substrate (MO/DO) and final product (OA) approached about the same values regardless of the initial substrate compn. and structure.

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 10 OF 52 MEDLINE on STN DUPLICATE 2
ACCESSION NUMBER: 2002227663 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11964257
TITLE: Conformational changes and orientation of **Humicola lanuginosa lipase** on a solid hydrophobic surface: an in situ interface Fourier transform infrared-attenuated total reflection study.
AUTHOR: Noinville Sylvie; Revault Madeleine; Baron Marie-Helene; Tiss Ali; Yapoudjian Stephane; Ivanova Margarita; Verger Robert
CORPORATE SOURCE: Laboratoire de Dynamique, Interactions et Reactivite, Centre National de la Recherche Scientifique, Universite Paris 6, 94320 Thiais, France.. sylvie.noinville@glvt-cnrs.fr
SOURCE: Biophysical journal, (2002 May) 82 (5) 2709-19. Journal code: 0370626. ISSN: 0006-3495.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200209
ENTRY DATE: Entered STN: 20020420
Last Updated on STN: 20020925
Entered Medline: 20020924

AB This study was done to better understand how **lipases** are activated at an interface. We investigated the conformational and solvation changes occurring during the adsorption of **Humicola lanuginosa lipase** (HLL) onto a hydrophobic surface using Fourier transform infrared-attenuated total reflection spectroscopy. The hydrophobic surfaces were obtained by coating silicon attenuated total reflection **crystal** with octadecyltrichlorosilane. Analysis of vibrational spectra was used to compare the conformation of HLL adsorbed at the aqueous-solid interface with its conformation in solution. **X-ray** crystallography has shown that HLL exists in two conformations, the closed and open forms. The conformational changes in HLL caused by adsorption onto the surface were compared with those occurring in three reference proteins, bovine serum albumin, lysozyme, and alpha-chymotrypsin. Adsorbed protein layers were prepared using proteins solutions of 0.005 to 0.5 mg/mL. The adsorptions of bovine serum albumin, lysozyme, and alpha-chymotrypsin to the hydrophobic support were accompanied by large unfoldings of ordered structures. In contrast, HLL underwent no secondary structure changes at first stage of adsorption, but there was a slight folding of beta-structures as the **lipase** monolayer became complete. Solvation studies using deuterated buffer showed an unusual hydrogen/deuterium exchange of the peptide CONH groups of the adsorbed HLL molecules. This exchange is consistent with the **lipase** being in the native open conformation at the water/hydrophobic interface.

L15 ANSWER 11 OF 52 MEDLINE on STN DUPLICATE 3
ACCESSION NUMBER: 2002164131 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11895431
TITLE: Binding of Thermomyces (**Humicola**) **lanuginosa lipase** to the mixed micelles of cis-parinaric acid/NaTDC.

AUTHOR: Yapoudjian Stephane; Ivanova Margarita G; Brzozowski A Marek; Patkar Shamkant A; Vind Jesper; Svendsen Allan; Verger Robert
CORPORATE SOURCE: Laboratoire de Lipolyse Enzymatique CNRS-IFR1, Marseille, France.
SOURCE: European journal of biochemistry / FEBS, (2002 Mar) 269 (6) 1613-21.
Journal code: 0107600. ISSN: 0014-2956.
PUB. COUNTRY: Germany: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: PDB-1GT6
ENTRY MONTH: 200205
ENTRY DATE: Entered STN: 20020317
Last Updated on STN: 20020602
Entered Medline: 20020531

AB The binding of Thermomyces lanuginosa **lipase** and its mutants [TLL(S146A), TLL(W89L), TLL(W117F, W221H, W260H)] to the mixed micelles of cis-parinaric acid/sodium taurodeoxycholate at pH 5.0 led to the quenching of the intrinsic tryptophan fluorescence emission (300-380 nm) and to a simultaneous increase in the cis-parinaric acid fluorescence emission (380-500 nm). These findings were used to characterize the Thermomyces lanuginosa **lipase**/cis-parinaric acid interactions occurring in the presence of sodium taurodeoxycholate.The fluorescence resonance energy transfer and Stern-Volmer quenching constant values obtained were correlated with the accessibility of the tryptophan residues to the cis-parinaric acid and with the lid opening ability of Thermomyces lanuginosa **lipase** (and its mutants). TLL(S146A) was found to have the highest fluorescence resonance energy transfer. In addition, a TLL(S146A)/oleic acid complex was crystallised and its **three-dimensional** structure was solved. Surprisingly, two possible binding modes (sn-1 and antisn1) were found to exist between oleic acid and the catalytic cleft of the open conformation of TLL(S146A). Both binding modes involved an interaction with tryptophan 89 of the **lipase** lid, in agreement with fluorescence resonance energy transfer experiments.As a consequence, we concluded that TLL(S146A) mutant is not an appropriate substitute for the wild-type Thermomyces lanuginosa **lipase** for mimicking the interaction between the wild-type enzyme and lipids.

L15 ANSWER 12 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2002:712270 SCISEARCH
THE GENUINE ARTICLE: 585HY
TITLE: Distinction between esterases and **lipases**: A kinetic study with vinyl esters and TAG
AUTHOR: Chahinian H; Nini L; Boitard E; Dubes J P; Comeau L C; Sarda L (Reprint)
CORPORATE SOURCE: Univ Aix Marseille 1, Biochim Lab, Fac St Charles, Case Postale 65, 3 Pl Victor Hugo, F-13331 Marseille 3, France (Reprint); Univ Aix Marseille 1, Biochim Lab, Fac St Charles, F-13331 Marseille 3, France; CNRS, Lab Lipolyse Enzymat, F-13402 Marseille, France; Fac Sci & Tech St Jerome, Lab Biochim Appl, F-13397 Marseille 20, France; Univ Aix Marseille 1, Lab Thermochim, Fac St Charles, F-13331 Marseille 3, France
COUNTRY OF AUTHOR: France
SOURCE: LIPIDS, (JUL 2002) Vol. 37, No. 7, pp. 653-662.
Publisher: AMER OIL CHEMISTS SOC A O C S PRESS, 1608 BROADMOOR DRIVE, CHAMPAIGN, IL 61821-0489 USA.
ISSN: 0024-4201.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 36

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The better to characterize enzymes hydrolyzing carboxyl ester bonds (carboxyl ester hydrolases), we have compared the kinetic behavior of various **lipases** and esterases against solutions and emulsions of vinyl esters and TAG. Short-chain vinyl esters are hydrolyzed at comparable rates by esterases and **lipases** and have higher limits

of solubility in water than corresponding TAG. Therefore, they are suited to study the influence of the physical state of the substrate on carboxyl ester hydrolase activity within a large concentration range. Enzymes used in this study are TAG **lipases** from microorganisms, **lipases** from human and guinea pig pancreas, pig liver esterase, and acetylcholinesterase. This study also includes cutinase, a fungal enzyme that displays functional properties between esterases and **lipases**. Esterases display maximal activity against solutions of short-chain vinyl esters (vinyl acetate, vinyl propionate, and vinyl butyrate) and TAG (triacetin, tripropionin, and tributyrin). Half-maximal activity is reached at ester concentrations far below the solubility limit. The transition from solution to emulsion at substrate concentrations exceeding the solubility limit has no effect on esterase activity. **Lipases** are active on solutions of short-chain vinyl esters and TAG but, in contrast to esterases, they all display maximal activity against emulsified substrates and half-maximal activity is reached at substrate concentrations near the solubility limit of the esters. The kinetics of hydrolysis of soluble substrates by **lipases** are either hyperbolic or deviate from the Michaelis-Menten model and show no or weak interfacial activation. The presence of molecular aggregates in solutions of short-chain substrates, as evidenced by a spectral dye method, likely accounts for the activity of **lipases** against soluble esters. Unlike esterases, **lipases** hydrolyze emulsions of water-insoluble medium- and long-chain vinyl esters and TAG such as vinyl laurate, trioctanoin, and olive oil. In conclusion, comparisons of the kinetic behavior of carboxyl ester hydrolases against solutions arid emulsions of vinyl esters and TAG allows the distinction between **lipases** and esterases. In this respect, it clearly appears that guinea pig pancreatic **lipase** and cutinase are unambiguously classified as **lipases**.

L15 ANSWER 13 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 4
ACCESSION NUMBER: 2002:546852 CAPLUS
DOCUMENT NUMBER: 139:97154
TITLE: **Lipase** action on a monoolein/sodium oleate aqueous cubic liquid crystalline phase-a NMR and **X-ray** diffraction study
AUTHOR(S): Caboi, Francesca; Borne, Johanna; Nylander, Tommy; Khan, Ali; Svendsen, Allan; Patkar, Shamkant
CORPORATE SOURCE: Center for Chemistry and Chemical Engineering, Physical Chemistry 1, Lund University, Lund, SE-221 00, Swed.
SOURCE: Colloids and Surfaces, B: Biointerfaces (2002), 26(1-2), 159-171
CODEN: CSBBEQ; ISSN: 0927-7765
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The effect of adding Thermomyces (formerly **Humicola**) **lanuginosa lipase** (TLL) to a monoolein (MO)/sodium oleate (NaO) aq. cubic liq. cryst. phase has been studied. 1H-NMR, 13C-NMR, 1H-PGSE (Pulsed-magnetic field Gradient Spin-Echo) self-diffusion measurements, and Small Angle **x-ray** Diffraction were used to follow the degrdn. of the cubic phase. The reaction sequence in terms of phase transitions follows the order bicontinuous cubic reverse hexagonal micellar cubic micellar phase and corresponds to the previously detd. phase diagrams. These changes correlate with changes in the lipid compn. obsd. by 13C-NMR and confirmed by HPLC anal. The initial decrease of the diffusion coeffs. of water and lipid can be related to the transformation of the bicontinuous cubic phase to a reverse hexagonal structure.
REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 14 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2002:545184 SCISEARCH
THE GENUINE ARTICLE: 566UC
TITLE: Orientation and conformation of a **lipase** at an interface studied by molecular dynamics simulations
AUTHOR: Jensen M O; Jensen T R; Kjaer K; Bjornholm T; Mouritsen O

G; Peters G H (Reprint)
CORPORATE SOURCE: Tech Univ Denmark, Dept Chem, Ctr Biomembrane Phys, DK-2800 Lyngby, Denmark (Reprint); Aarhus Univ, Dept Chem, DK-8000 Aarhus C, Denmark; Riso Natl Lab, Condensed Matter Phys & Chem Dept, DK-4000 Roskilde, Denmark; Univ Copenhagen, Nano Sci Ctr, Dept Chem, DK-2100 Copenhagen O, Denmark; Uni So Denmark, Dept Phys, Ctr Biomembrane Phys MEMPHYS, DK-5230 Odense M, Denmark
COUNTRY OF AUTHOR: Denmark
SOURCE: BIOPHYSICAL JOURNAL, (JUL 2002) Vol. 83, No. 1, pp. 98-111

Publisher: BIOPHYSICAL SOCIETY, 9650 ROCKVILLE PIKE, BETHESDA, MD 20814-3998 USA.
ISSN: 0006-3495.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 43

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Electron density profiles calculated from molecular dynamics trajectories are used to deduce the orientation and conformation of Thermomyces lanuginosa **lipase** and a mutant adsorbed at an air-water interface. It is demonstrated that the profiles display distinct fine structures, which uniquely characterize enzyme orientation and conformation. The density profiles are, on the nanosecond timescale, determined by the average enzyme conformation. We outline a Computational scheme that from a single molecular dynamics trajectory allows for extraction of electron density profiles referring to different orientations of the **lipase** relative to an implicit interface. Profiles calculated for the inactive and active conformations of the **lipase** are compared with experimental electron density profiles measured by **x-ray** reflectivity for the **lipase** adsorbed at an air-water interface. The experimental profiles contain less fine structural information than the calculated profiles because the resolution of the experiment is limited by the intrinsic surface roughness of water. Least squares fits of the calculated profiles to the experimental profiles provide areas per adsorbed enzyme and suggest that Thermomyces lanuginosa **lipase** adsorbs to the air-water interface in a semiopen conformation with the lid oriented away from the interface.

L15 ANSWER 15 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2002:978831 SCISEARCH
THE GENUINE ARTICLE: 619QG
TITLE: Studies on ferulic acid esterase activity in fungal **lipases** and cutinases
AUTHOR: Andersen A (Reprint); Svendsen A; Vind J; Lassen S F; Hjort C; Borch K; Patkar S A
CORPORATE SOURCE: Novozymes AS, Dept Prot Chem, DK-2880 Bagsvaerd, Denmark
COUNTRY OF AUTHOR: Denmark
SOURCE: COLLOIDS AND SURFACES B-BIOINTERFACES, (SEP 2002) Vol. 26, No. 1-2, pp. 47-55.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0927-7765.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 38

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB In this study we have tested a number of **lipases**, **lipase** variants and cutinases for ferulic acid esterase activity, using ferulic acid ethyl ester as substrate. It was shown that Thermomyces lanuginosa **lipase** (TLL), Candida antartica **lipase** A, Candida antartica **lipase** B, Rhizomucor miehei **lipase** and Fusarium oxysporum **lipase** have no significant ferulic acid esterase activity. Thirteen variants of TLL were constructed based on a model of Aspergillus niger ferulic acid esterase A (FAE-A). Activity assay using ferulic acid ethyl ester as substrate gave, for FAE-A, 112 U/mg = 112 mumol ferulic acid released per min per mg enzyme. Two of the variants of TLL had significant ferulic acid esterase activity, TLLv1 (7 U/mg) and TLLv10 (20 U/mg). Both these variants contain the mutation F113Y that seems to be essential for ferulic acid esterase activity. In addition to

lipase activity, three cutinases showed ferulic acid esterase activity, Aspergillus oryzae cutinase (5 U/mg), Fusarium solani pisi cutinase (13 U/mg), Humicola insolence cutinase (20 U/mg). (C) 2002 Elsevier Science B.V. All rights reserved.

L15 ANSWER 16 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2001:234418 SCISEARCH
THE GENUINE ARTICLE: 409VU
TITLE: The closed/open model for **lipase** activation. Addressing intermediate active forms of fungal enzymes by trapping of conformers in water-restricted environments
AUTHOR: Gonzalez-Navarro H; Bano M C; Abad C (Reprint)
CORPORATE SOURCE: Univ Valencia, Fac Biol, Dept Bioquim & Biol Mol, E-46100 Burjassot, Spain (Reprint)
COUNTRY OF AUTHOR: Spain
SOURCE: BIOCHEMISTRY, (13 MAR 2001) Vol. 40, No. 10, pp. 3174-3183
Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036 USA.
ISSN: 0006-2960.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 51

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The behavior of prototypic fungal **lipases** in a water-restricted environment has been investigated by exploiting the reported experimental strategy that allows the trapping (freeze-drying) of the enzyme in the conformation present in aqueous solution and to subsequently assay it in nonaqueous media [Mingarro, I., Abad, C., and Brace, L. (1995) Proc. Natl. Acad. Sci. U.S.A. 92, 3308-3312. We now report, using simple esterification as well as acidolysis (triglycerides as substrates) as nonaqueous model reactions, that the presence of a detergent (n-octyl-beta -glucopyranoside) in the freeze-drying buffer, at concentrations below the critical micellar concentration, generates different catalytically active (kinetically trapped) conformational states of the enzyme. These activated forms exquisitely discriminate between short- and long-chain fatty acids, suggesting that they can be correlated with intermediate conformations of the protein sufficiently open to permit the access of relatively small but not large substrates. Additional data obtained from aqueous solution activity measurements in the presence of detergent revealed that the fungal **lipase** retains an active conformation induced by high detergent concentration (30 mM) for a long period of time, a 'memory effect', which is stabilized in the absence of a well-defined interface by few detergent molecules. Together these results provide support to a model of **lipase** action involving several equilibrium states (closed, intermediate, and open), which can be modulated by the composition of the microenvironment, i.e., by the detergent concentration.

L15 ANSWER 17 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2001:974445 SCISEARCH
THE GENUINE ARTICLE: 498EN
TITLE: Adsorption properties and activities of **lipase** on a gold substrate modified by self-assembled monolayers
AUTHOR: Kobayashi A; Sato Y (Reprint); Mizutani F
CORPORATE SOURCE: Natl Inst Adv Ind Sci & Technol, 1-1-1 Higashi, Tsukuba, Ibaraki 3058566, Japan (Reprint); Natl Inst Adv Ind Sci & Technol, Tsukuba, Ibaraki 3058566, Japan
COUNTRY OF AUTHOR: Japan
SOURCE: BIOSCIENCE BIOTECHNOLOGY AND BIOCHEMISTRY, (NOV 2001) Vol. 65, No. 11, pp. 2392-2396.
Publisher: JAPAN SOC BIOSCI BIOTECHN AGROCHEM, JAPAN ACAD SOC CTR BLDG, 2-4-6 YAYOI BUNKYO-KU, TOKYO, 113, JAPAN.
ISSN: 0916-8451.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 28

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The adsorption properties, amount and specific activity of

lipase D from Rhizopus delemar were investigated by employing a gold substrate modified with seven kinds of thiol monolayer. Quartz **crystal** microbalance measurements revealed that the amount of the enzyme adsorbed to the hydrophobic monolayers (e.g. benzenethiol) was much higher than that to the hydrophilic monolayers (e.g. 3-mercaptopropanoic acid). In contrast, **lipase** D adsorbed to the hydrophilic, 2-amino-1-ethanethiol monolayer showed the highest specific activity, the value being 300-fold higher than for the same enzyme dissolved in an aqueous medium.

L15 ANSWER 18 OF 52 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2001:139672 BIOSIS
DOCUMENT NUMBER: PREV200100139672
TITLE: Preferred interfacial orientation and conformation of a **lipase** investigated by Molecular Dynamics simulations.
AUTHOR(S): Jensen, Morten Oestergaard [Reprint author]; Mouritsen, Ole G. [Reprint author]; Jensen, Torben R.; Kjaer, Kristian; Balashev, Konstantin; Bjoernholm, Thomas; Peters, Guenther H. [Reprint author]
CORPORATE SOURCE: Technical University of Denmark, Building 206, Lyngby, DK-2800, Denmark
SOURCE: Biophysical Journal, (January, 2001) Vol. 80, No. 1 Part 2, pp. 326a. print.
Meeting Info.: 45th Annual Meeting of the Biophysical Society. Boston, Massachusetts, USA. February 17-21, 2001. Biophysical Society.
CODEN: BIOJAU. ISSN: 0006-3495.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
Conference; (Meeting Poster)
LANGUAGE: English
ENTRY DATE: Entered STN: 21 Mar 2001
Last Updated on STN: 15 Feb 2002

L15 ANSWER 19 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2001:180786 SCISEARCH
THE GENUINE ARTICLE: 402QJ
TITLE: How do **lipases** and esterases work: the electrostatic contribution
AUTHOR: Petersen M T N; Fojan P; Petersen S B (Reprint)
CORPORATE SOURCE: Univ Aalborg, Inst Life Sci, Biostruct & Prot Engn Grp, Sohngaardsholmsvej 57, DK-9000 Aalborg, Denmark (Reprint); Univ Aalborg, Inst Life Sci, Biostruct & Prot Engn Grp, DK-9000 Aalborg, Denmark
COUNTRY OF AUTHOR: Denmark
SOURCE: JOURNAL OF BIOTECHNOLOGY, (13 FEB 2001) Vol. 85, No. 2, pp. 115-147.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0168-1656.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 36
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB This work explores the role of one of the factors explaining **lipase**/esterase activity: the contribution of electrostatic interactions to **lipase**/esterase activity. The electrostatic potential distribution on the molecular surface of an enzyme as a function of pH determines, to a large extent, the enzyme's pH activity profile. Other important factors include the presence and distribution of polar and hydrophobic residues in the active cleft. We have mapped the electrostatic potential distribution as a function of pH on the molecular surface of nine **lipases**/esterases for which the 3D structure is experimentally known. A comparison of these potential maps at different pH values with the corresponding pH-activity profile, pH optimum or pH range where the activity displayed by the enzyme is maximum, has revealed a considerable correlation. A negative potential in the active site appears correlated with maximum activity towards triglycerides, which has prompted

us to propose a model for product release ('The electrostatic catapult model') after cleavage of an ester bond. At the same time as the bottom of the active site cleft becomes negatively charged, other nearby regions also titrate and become negatively charged when pH becomes more alkaline, for some of the studied **lipases**. If such **lipases** also show phospholipase activity (such as guinea pig **lipase**-related proteins 2 chimera) we raise the hypothesis that such other titratable regions after becoming negatively charged might stabilise the positive charge present in the polar head of phospholipids, such as phosphatidylcholine, phosphatidylethanolamine and phosphatidylserine. The distribution of polar, weak polar and non-polar residues on the molecular surface of each studied **lipase**, in particular the active site region, was compared for all the **lipases** studied. The combination of graphical visualisation of the electrostatic potential maps and the polarity maps combined with knowledge about the location of key residues on the protein surface allows us to envision atomic models for lipolytic activity.

L15 ANSWER 20 OF 52 MEDLINE on STN DUPLICATE 5
ACCESSION NUMBER: 2001081172 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11106485
TITLE: Structural origins of the interfacial activation in Thermomyces (**Humicola**) **lanuginosa** **lipase**.
AUTHOR: Brzozowski A M; Savage H; Verma C S; Turkenburg J P; Lawson D M; Svendsen A; Patkar S
CORPORATE SOURCE: York Structural Biology Laboratory, Department of Chemistry, University of York, Heslington, YO10 5DD, U.K.. marek@ysbl.york.ac.uk
SOURCE: Biochemistry, (2000 Dec 12) 39 (49) 15071-82. Journal code: 0370623. ISSN: 0006-2960.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: PDB-1DT3; PDB-1DT5; PDB-1DTE; PDB-1DU4; PDB-1EIN
ENTRY MONTH: 200101
ENTRY DATE: Entered STN: 20010322
Last Updated on STN: 20010322
Entered Medline: 20010108

AB The already known **X-ray** structures of **lipases** provide little evidence about initial, discrete structural steps occurring in the first phases of their activation in the presence of lipids (process referred to as interfacial activation). To address this problem, five new Thermomyces (formerly **Humicola**) **lanuginosa** **lipase** (TlL) **crystal** structures have been solved and compared with four previously reported structures of this enzyme. The bias coming from different crystallization media has been minimized by the growth of all **crystals** under the same crystallization conditions, in the presence of detergent/lipid analogues, with low or high ionic strength as the only main variable. Resulting structures and their characteristic features allowed the identification of three structurally distinct species of this enzyme: low activity form (LA), activated form (A), and fully Active (FA) form. The isomerization of the Cys268-Cys22 disulfide, synchronized with the formation of a new, short alpha(0) helix and flipping of the Arg84 (Arginine switch) located in the lid's proximal hinge, have been postulated as the key, structural factors of the initial transitions between LA and A forms. The experimental results were supplemented by theoretical calculations. The magnitude of the activation barrier between LA (ground state) and A (end state) forms of TlL (10.6 kcal/mol) is comparable to the enthalpic barriers typical for ring flips and disulfide isomerizations at ambient temperatures. This suggests that the sequence of the structural changes, as exemplified in various TlL **crystal** structures, mirror those that may occur during interfacial activation.

L15 ANSWER 21 OF 52 SCISEARCH on STN
ACCESSION NUMBER: 2000:200467 SCISEARCH
THE GENUINE ARTICLE: 290VD
TITLE: Detergent-induced conformational changes of

Humicola lanuginosa lipase
studied by fluorescence spectroscopy

AUTHOR: Jutila A; Zhu K; Patkar S A; Vind J; Svendsen A; Kinnunen P K J (Reprint)

CORPORATE SOURCE: UNIV HELSINKI, INST BIOMED, DEPT MED CHEM, HELSINKI BIOPHYS & BIOMEMBRANE GRP, FIN-00014 HELSINKI, FINLAND (Reprint); UNIV HELSINKI, INST BIOMED, DEPT MED CHEM, HELSINKI BIOPHYS & BIOMEMBRANE GRP, FIN-00014 HELSINKI, FINLAND; NOVO NORDISK AS, ENZYME DESIGN, DK-2880 BAGSVAERD, DENMARK

COUNTRY OF AUTHOR: FINLAND; DENMARK

SOURCE: BIOPHYSICAL JOURNAL, (MAR 2000) Vol. 78, No. 3, pp. 1634-1642.
Publisher: BIOPHYSICAL SOCIETY, 9650 ROCKVILLE PIKE, BETHESDA, MD 20814-3998.
ISSN: 0006-3495.

DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 43

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Detergent (pentaoxyethylene octyl ether, C8E5)-induced conformational changes of **Humicola lanuginosa lipase** (HLL) were investigated by stationary and time-resolved fluorescence intensity and anisotropy measurements. Activation of HLL is characterized by opening of a surface loop (the ''lid'') residing directly over the enzyme active site. The interaction of HLL with C8E5 increases fluorescence intensities, prolongs fluorescence lifetimes, and decreases the values of steady-slate anisotropy, residual anisotropy, and the short rotational correlation time. Based on these data, we propose the following model. Already below critical micellar concentration (CMC) the detergent can intercalate into the active site accommodating cleft, while the lid remains closed. Occupation of the cleft by C8E5 also blocks the entry of the monomeric substrate, and inhibition of catalytic activity at [C8E5] less than or equal to CMC is evident. At a threshold concentration close to CMC the cooperativity of the hydrophobicity-driven binding of C8E5 to the **lipase** increases because of an increase in the number of C8E5 molecules present in the premicellar nucleates on the hydrophobic surface of HLL. These aggregates contacting the **lipase** should have long enough residence times to allow the lid to open completely and expose the hydrophobic cleft. Concomitantly, the cleft becomes filled with C8E5 and the ''open'' conformation of HLL becomes stable.

L15 ANSWER 22 OF 52 SCISEARCH on STN

ACCESSION NUMBER: 2000:942772 SCISEARCH
THE GENUINE ARTICLE: 381KK

TITLE: Effect of the lipid interface on the catalytic activity and spectroscopic properties of a fungal **lipase**

AUTHOR: Cajal Y (Reprint); Svendsen A; DeBolos J; Patkar S A; Alsina M A

CORPORATE SOURCE: UNIV BARCELONA, SCH PHARM, DEPT CHEM PHYS, AVN JOAN XXIII S-N, BARCELONA 08028, SPAIN (Reprint); NOVO NORDISK AS, ENZYME RES, BAGSVAERD 2880, DENMARK

COUNTRY OF AUTHOR: SPAIN; DENMARK

SOURCE: BIOCHIMIE, (NOV 2000) Vol. 82, No. 11, pp. 1053-1061.
Publisher: EDITIONS SCIENTIFIQUES MEDICALES ELSEVIER, 23 RUE LINOIS, 75724 PARIS CEDEX 15, FRANCE.
ISSN: 0300-9084.

DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 53

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB **Lipase** from the fungi Thermomyces (formerly **Humicola**) **lanuginosa** (TIL) is widely used in industry. This interfacial enzyme is inactive under aqueous conditions, but catalytic activation is induced on binding to a lipid-water interface. In order for protein engineering to design more efficient mutants of TIL for specific applications, it is important to characterize its interfacial catalysis. A complete analysis of steady-state kinetics for the hydrolysis of a soluble

substrate by TIL has been developed using an interface different from the substrate. Small vesicles of 1-palmitoyl-2-oleoylglycero-sn-3-phosphoglycerol (POPG) or other anionic phospholipids are a neutral diluent interface for the partitioning of substrate and enzyme. TIL binds to these interfaces in an active or open form, thus implying a displacement of the helical lid away from the active site. A study of the influence of substrate and diluent concentration dependence of the rate of hydrolysis provides a basis for the determination of the primary interfacial catalytic parameters. The interfacial activation is not supported by zwitterionic vesicles or by large anionic vesicles of 100 nm diameter, although TIL binds to these interfaces. Using a combination of fluorescence-based techniques applied to several mutants of TIL with different tryptophan residues we have shown that TIL binds to phospholipid vesicles in different forms rendering different catalytic activities, and that the open lid conformation is achieved and stabilized by a combination of electrostatic and hydrophobic interactions between the enzyme's lipid-binding face and the interface. (C) 2000 Societe francaise de biochimie et biologie moleculaire / Editions scientifiques et medicales Elsevier SAS.

L15 ANSWER 23 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2000:942768 SCISEARCH
THE GENUINE ARTICLE: 381KK
TITLE: Fusarium solani pisi cutinase
AUTHOR: Egmond M R (Reprint); deVlieg J
CORPORATE SOURCE: UNILEVER RES LABS, OLIVIER VAN NOORTLAAN 120, NL-3133 AT VLAARDINGEN, NETHERLANDS (Reprint)
COUNTRY OF AUTHOR: NETHERLANDS
SOURCE: BIOCHIMIE, (NOV 2000) Vol. 82, No. 11, pp. 1015-1021. Publisher: EDITIONS SCIENTIFIQUES MEDICALES ELSEVIER, 23 RUE LINOIS, 75724 PARIS CEDEX 15, FRANCE. ISSN: 0300-9084.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 30

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Cutinase from Fusarium solani pisi has been studied extensively with respect to its structural and functional properties. The **crystal** structure of the enzyme was solved to high atomic resolution (1 angstrom), while data on structural dynamics have been obtained from detailed NMR studies. Functional data were mainly derived from kinetic studies using substrate analogues that simplify the kinetic behaviour. The properties of wild-type cutinase are reviewed and discussed in relation with the effects brought about by site-directed variants of the enzyme. (C) 2000 Societe francaise de biochimie et biologie moleculaire / Editions scientifiques et medicales Elsevier SAS.

L15 ANSWER 24 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2000:97715 SCISEARCH
THE GENUINE ARTICLE: 278WY
TITLE: Interfacial control of lid opening in Thermomyces lanuginosa **lipase**
AUTHOR: Cajal Y (Reprint); Svendsen A; Girona V; Patkar S A; Alsina M A
CORPORATE SOURCE: UNIV BARCELONA, SCH PHARM, DEPT CHEM PHYS, AVN JOAN XXIII S-N, BARCELONA 08028, SPAIN (Reprint)
COUNTRY OF AUTHOR: SPAIN
SOURCE: BIOCHEMISTRY, (18 JAN 2000) Vol. 39, No. 2, pp. 413-423. Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036. ISSN: 0006-2960.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 48

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Small unilamelar vesicles of anionic phospholipids (SUV), such as 1-palmitoyl-2-oleoylglycero-sn-3-phosphoglycerol (POPG), provide an

interface where Thermomyces lanuginosa triglyceride **lipase** (TIL) binds and adopts a catalytically active conformation for the hydrolysis of substrate partitioned in the interface, such as tributyrin or p-nitrophenylbutyrate, with an increase in catalytic rate of more than 100-fold for the same concentration of substrate [Berg et al. (1998) Biochemistry; 37, 6615-6627.]. This interfacial activation is not seen with large unilamelar vesicles (LUV) of the same composition, or with vesicles of zwitterionic phospholipids such as 1-palmitoyl-2-oleoylglycero-sn-3-phosphocholine (POPC), independently of the vesicle size. Tryptophan fluorescence experiments show that **lipase** binds to all those types of vesicles with similar affinity, but it adopts different forms that can be correlated with the enzyme catalytic activity. The spectral change on binding to anionic SUV corresponds to the catalytically active, or ''open'' form of the enzyme, and it is not modified in the presence of substrate partitioned in the vesicles, as demonstrated with inactive mutants. This indicates that the displacement of the lid characteristic of **lipase** interfacial activation is induced by the anionic phospholipid interface without blocking the accessibility of the active site to the substrate, Experiments with a mutant containing only Trp89 in the lid show that most of the spectral changes on binding to POPG-SUVs take place in the lid region that covers the active site; an increase in Trp anisotropy indicates that the lid becomes less flexible in the active form, and quenching experiments show that it is significantly buried from the aqueous phase. On the other hand, results with a mutant where Trp89 is changed to Leu show that the environment of the structural tryptophans in positions 117, 221, and 260 is somehow altered on binding, although their mobility and solvent accessibility remains the same as in the inactive form in solution. The form of TIL bound to POPC-SUV or -LUV vesicles as well as to LW vesicles of POPG has the same spectral signatures and corresponds to an inactive or ''closed'' form of the enzyme. In these interfaces, the lid is highly flexible, and Trp89 remains accessible to solvent. Resonance energy transfer experiments show that the orientation of TIL in the interface is different in the active and inactive forms. A model of interaction consistent with these data and the available **X-ray** structures is proposed. This is a unique system where the composition and physical properties of the lipid interface control the enzyme activity.

L15 ANSWER 25 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2000:704856 SCISEARCH
THE GENUINE ARTICLE: 353GH
TITLE: Influence of lid conformation on **lipase** enantioselectivity
AUTHOR: Overbeeke P L A; Govardhan C; Khalaf N; Jongejan J A (Reprint); Heijnen J J
CORPORATE SOURCE: DELFT UNIV TECHNOL, DEPT BIOTECHNOL, FAC CHEM TECHNOL & MAT SCI, JULIANALAAN 67, NL-2628 BC DELFT, NETHERLANDS (Reprint); DELFT UNIV TECHNOL, DEPT BIOTECHNOL, FAC CHEM TECHNOL & MAT SCI, NL-2628 BC DELFT, NETHERLANDS; ALTUS BIOL, CAMBRIDGE, MA 02139
COUNTRY OF AUTHOR: NETHERLANDS; USA
SOURCE: JOURNAL OF MOLECULAR CATALYSIS B-ENZYMATIC, (18 SEP 2000) Vol. 10, No. 4, pp. 385-393.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 1381-1177.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: PHYS
LANGUAGE: English
REFERENCE COUNT: 39

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The enantioselectivity of porcine pancreatic **lipase** (PPL) in the hydrolysis reaction of racemic glycidyl butyrate has been observed to increase substantially upon interfacial activation of the enzyme. The enantioselectivity of Candida antarctica **Lipase** B (CalB), a **lipase** that does not display interfacial activation, does not change when the substrate concentration exceeds the solubility limit. A hypothesis, based on a kinetic model, is presented that relates the change of enantioselectivity to the conformational changes that accompany movements of the lid upon interfacial activation. The hypothesis was

investigated using various forms of the C. rugosa **Lipase** (Crl). For several substrates, the enantioselectivities of hydrolysis reactions catalyzed by crude, purified, and crystalline (CLEC(R)) preparations of Crl in open and closed conformations were measured. As anticipated, the enantioselectivity of open-lid Crl-CLECs in the hydrolysis of racemic ibuprofen methyl ester exceeded that of the closed-lid form. For other esters, however, correlations were less straightforward. It was concluded that apart from affecting the activation barrier leading to the Michaelis-Menten complex, modifications of the lid (open, closed, or modified lid) also induce additional conformational changes in the active site affecting enantioselectivity. (C) 2000 Elsevier Science B.V. All rights reserved.

L15 ANSWER 26 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2000:444197 SCISEARCH
THE GENUINE ARTICLE: 321YW
TITLE: Comparative fatty acid selectivity of **lipases** in esterification reactions with glycerol and diol analogues in organic media
AUTHOR: Lee C H; Parkin K L (Reprint)
CORPORATE SOURCE: UNIV WISCONSIN, DEPT FOOD SCI, 1605 LINDEN DR, MADISON, WI 53706 (Reprint); UNIV WISCONSIN, DEPT FOOD SCI, MADISON, WI 53706
COUNTRY OF AUTHOR: USA
SOURCE: BIOTECHNOLOGY PROGRESS, (MAY-JUN 2000) Vol. 16, No. 3, pp. 372-377.
Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036.
ISSN: 8756-7938.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 50

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Reaction selectivity of Pseudomonas cepacia, Rhizomucor miehei, and Candida antarctica B **lipases** was assessed in multicompetitive esterification reaction mixtures containing an homologous series of 12-chain even carbon number fatty acid (FA; C4-C18) substrates and a single alcohol cosubstrate (glycerol, 1,2-propanediol (1,2-PD), or 1,3-propanediol (1,3-PD)) in tert-butyl methyl ether at water activity of 0.69 or 0.90 and a reaction temperature of 35 degrees C. For P. cepacia **lipase**, the ordinal patterns of FA selectivities observed were, with glycerol, C8 > C10, C6, C16 > other FA; with 1,2-PD and 1,3-PD, C16 > C8 > C14 > other FA. For R. miehei **lipase**, the ordinal patterns of FA selectivities observed were, with glycerol, C8 > C12 > C10, C14 > other FA; with 1,2-PD and 1,3-PD, C8 > C12 > other FA. For C. antarctica B **lipase**, the ordinal patterns of FA selectivities observed were, with glycerol, C8 > C10, C6, C12 > other FA; with 1,2-PD, C8 > C10, C6 > other FA; and with 1,3-PD, C8 > C10 > C6 > other FA. The differences in selectivity among FA ranged up to le-fold, depending upon the **lipase** and alcohol cosubstrate used. These findings represent intrinsic and substrate-modulated features of FA selectivities that are of particular relevance to the use of **lipases** for acylglycerol synthesis reactions.

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ACCESSION NUMBER: 2000:920173 SCISEARCH
THE GENUINE ARTICLE: 378PT
TITLE: The conformational changes of the fungal **lipase** from **Humicola lanuginosa** induced by the formation of bile salt and mixed micelles
AUTHOR: Stobiecka A (Reprint)
CORPORATE SOURCE: TECH UNIV LODZ, INST GEN FOOD CHEM, STEFANOWSKIEGO 4-10, PL-90924 LODZ, POLAND (Reprint)
COUNTRY OF AUTHOR: POLAND
SOURCE: JOURNAL OF FLUORESCENCE, (DEC 2000) Vol. 10, No. 4, pp. 307-315.
Publisher: PLENUM PUBL CORP, 233 SPRING ST, NEW YORK, NY 10013.

ISSN: 1053-0509.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: PHYS
LANGUAGE: English
REFERENCE COUNT: 20

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The effect of sodium taurodeoxycholate and a mixture of sodium taurodeoxycholate/phosphatidylcholine on the activation of fungal **Lipase** from **Humicola lanuginosa** (HLL) was investigated by monitoring the specific activity and the changes in intrinsic protein fluorescence. A large increase in the inactivation rate was observed at about the critical micellar concentration of bile salt. On the contrary, a high activation of **lipase** was achieved by the presence of mixed micelles. Steady-state fluorescence quenching measurements were performed to resolve the fluorescence contribution of W89 residue in emission of four-tryptophan-containing HLL **lipase** . The W89 residue is located in the ''lid'' helix which participates in interfacial activation of the enzyme. The assignment of W89 residue was confirmed by use of the W89F mutant and inhibited form of **lipase** . The FQRS (fluorescence quenching resolved spectral method was used to decompose the total emission spectrum of HLL **lipase**. The FQRS results show that the fluorescence of the W89 residue is similar in inhibited and inactivated HLL **lipase** and exhibits a maximum of emission at about 345 +/- 1 nm (lambda (ex) = 295 nm). In the mixed micelle solution the fluorescence of the W89 residue may be resolved into two components, with fluorescence maxima at 337 and 347 nm, respectively (lambda (ex) = 295 nm). It is concluded that HLL **lipase** undergoes a conformational transition upon specific interactions with both anionic and mixed micelles, resulting in a change in the microenvironment of the W89 residue.

L15 ANSWER 28 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2000:312671 SCISEARCH
THE GENUINE ARTICLE: 305AE
TITLE: Molecular basis of **lipase** stereoselectivity
AUTHOR: Kovac A; Scheib H; Pleiss J; Schmid R D; Paltauf F (Reprint)
CORPORATE SOURCE: GRAZ TECH UNIV, DEPT BIOCHEM & FOOD CHEM, PETERSGASSE 12-2, A-8010 GRAZ, AUSTRIA (Reprint); GRAZ TECH UNIV, DEPT BIOCHEM & FOOD CHEM, A-8010 GRAZ, AUSTRIA; UNIV STUTTGART, INST TECH BIOCHEM, D-7000 STUTTGART, GERMANY
COUNTRY OF AUTHOR: AUSTRIA; GERMANY
SOURCE: EUROPEAN JOURNAL OF LIPID SCIENCE AND TECHNOLOGY, (JAN 2000) Vol. 102, No. 1, pp. 61-77.
Publisher: WILEY-V C H VERLAG GMBH, MUHLENSTRASSE 33-34, D-13187 BERLIN, GERMANY.
ISSN: 1438-7697.
DOCUMENT TYPE: General Review; Journal
FILE SEGMENT: AGRI
LANGUAGE: English
REFERENCE COUNT: 104

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB **Lipases** exhibit specific catalytic properties that make them attractive to biotechnological applications. Most important are the broad substrate specificity and the regio- and stereoselectivity of **lipases**. Despite mechanistic and structural similarities **lipases** differ significantly with respect to stereoselectivity toward natural and synthetic substrates. Models developed to describe and predict stereoselectivity toward certain types of synthetic substrates, e.g., secondary alcohols cannot be applied to natural acylglycerols, that are hydrolyzed by several animal and microbial **lipases** in a regioselective or stereoselective manner. Therefore, computer-aided molecular modeling studies were used in order to predict the stereopreference of **lipases** toward triradylglycerols. **Lipase** variants with modified stereoselectivity properties toward triacylglycerols were engineered by re-designing the recombinant enzyme. To understand the interactions governing **lipase** stereoselectivity towards natural substrates, knowledge of the structure of enzyme-substrate complexes at the atomic level is essential. Such information can be obtained by **X-ray** or NMR analysis

of covalent enzyme-inhibitor complexes. The **crystal** structures of enzymes complexed with triacylglycerol analog inhibitors allowed the identification of distinct binding sites for the three hydrophobic chains of the inhibitor.

L15 ANSWER 29 OF 52 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2000006306 EMBASE
TITLE: Switched enantiopreference of Humicola **lipase** for 2-phenoxyalkanoic acid ester homologs can be rationalized by different substrate binding modes.
AUTHOR: Berglund P.; Vallikivi I.; Fransson L.; Dannacher H.; Holmquist M.; Martinelle M.; Bjorkling F.; Parve O.; Hult K.
CORPORATE SOURCE: P. Berglund, Department of Biotechnology, Royal Institute of Technology, SE-100 44 Stockholm, Sweden. per.berglund@biochem.kth.se
SOURCE: Tetrahedron Asymmetry, (1999) 10/21 (4191-4202). Refs: 32
ISSN: 0957-4166 CODEN: TASYE3
PUBLISHER IDENT.: S 0957-4166(99)00438-3
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB **Humicola lanuginosa lipase** was used for enantioselective hydrolyses of a series of homologous 2-phenoxyalkanoic acid ethyl esters. The enantioselectivity (E-value) of the enzyme changed from an (R)-enantiomer preference for the smallest substrate, 2-phenoxypropanoic acid ester, to an (S)-enantiomer preference for the homologous esters with longer acyl moieties. The E-values span the range from E=13 (R) to E=56 (S). A molecular modeling study identified two different substrate-binding modes for each enantiomer. We found that the enantiomers favored different modes. This discovery provided a model that offered a rational explanation for the observed switch in enantioselectivity.

L15 ANSWER 30 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 1999:338636 SCISEARCH
THE GENUINE ARTICLE: 189VM
TITLE: Molecular basis for enantioselectivity of **lipase** from Pseudomonas cepacia toward primary alcohols. Modeling, kinetics, and chemical modification of Tyr29 to increase or decrease enantioselectivity
AUTHOR: Tuomi W V; Kazlauskas R J (Reprint)
CORPORATE SOURCE: MCGILL UNIV, DEPT CHEM, 801 SHERBROOKE ST W, MONTREAL, PQ H3A 2K6, CANADA (Reprint); MCGILL UNIV, DEPT CHEM, MONTREAL, PQ H3A 2K6, CANADA
COUNTRY OF AUTHOR: CANADA
SOURCE: JOURNAL OF ORGANIC CHEMISTRY, (16 APR 1999) Vol. 64, No. 8, pp. 2638-2647. Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036. ISSN: 0022-3263.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: PHYS; LIFE
LANGUAGE: English
REFERENCE COUNT: 59

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB **Lipase** from Pseudomonas cepacia (PCL) shows good enantioselectivity toward primary alcohols, An empirical rule can predict which enantiomer of a primary alcohol reacts faster, but there is no reliable strategy to increase the enantioselectivity. We used a combination of molecular modeling of **lipase**-transition state analogue complexes and kinetic measurements to identify the molecular basis of the enantioselectivity toward two primary alcohols: 2-methyl-3-phenyl-1-propanol, 1, and 2-phenoxy-1-propanol, 2. In hydrolysis of the acetate esters, PCL favors the (S)-enantiomer of both substrates (E = 16 and 17, respectively), but, due to changes in

priorities of the substituents, the (S)-enantiomers of 1 and 2 have opposite shapes. Computer modeling of transition state analogues bound to PCL show that primary alcohols bind to PCL differently than secondary alcohols. Modeling and kinetics suggest that the enantioselectivity of PCL toward 1 comes from the binding of the methyl group at the stereocenter within a hydrophobic pocket for the fast-reacting enantiomer, but not for the slow-reacting enantiomer. On the other hand, the enantioselectivity toward 2 comes from an extra hydrogen bond between the phenoxy oxygen of the substrate to the phenolic OH of Tyr29. This hydrogen bond may slow release of the (R)-alcohol and thus account for the reversal of enantioselectvity. To decrease the enantioselectivity of PCL toward 2-acetate by a factor of 2 to E = 8, we eliminated the hydrogen bond by acetylation of the tyrosyl residues with N-acetylimidazole. To increase the enantioselectivity of PCL toward 2-acetate by a factor of 2 to E = 36, we increased the strength of the hydrogen bond by nitration of the tyrosyl residues with tetranitromethane. This is one of the first examples of a rationally designed modification of a **lipase** to increase enantioselectivity.

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ACCESSION NUMBER: 1999:944480 SCISEARCH
THE GENUINE ARTICLE: 261UC
TITLE: The use of **lipases** as agents of kinetic resolution of enantiomers in organic synthesis: General aspects of solvent's influence.
AUTHOR: Costa V E U (Reprint); deAmorim H L N
CORPORATE SOURCE: UNIV FED RIO GRANDE SUL, INST QUIM, AV BENTO GONCALVES 9500, CAMPUS VALE, BR-91501970 PORTO ALEGRE, RS, BRAZIL (Reprint)
COUNTRY OF AUTHOR: BRAZIL
SOURCE: QUIMICA NOVA, (NOV-DEC 1999) Vol. 22, No. 6, pp. 863-873. Publisher: SOC BRASILEIRA QUIMICA, CAIXA POSTAL 26037, 05599-970 SAO PAULO, BRAZIL. ISSN: 0100-4042.
DOCUMENT TYPE: Article; Journal
LANGUAGE: Spanish
REFERENCE COUNT: 90

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB In organic synthesis, **lipases** are the most frequently used biocatalysts. They are efficient stereoselective catalysts in the kinetic resolution of a wide variety of chiral compounds. The discovery that enzymes possess catalytic activity in organic solvents has made it possible to address the question of reaction medium influence on enzymatic specificity. Perhaps the most exciting and significant development in this emerging area is the discovery that enzyme specificity, in particular enantioselectivity, can be affected by changing from one organic solvent to another. This article discusses the scope and possible mechanistic models of this phenomenon in hydrolases, specially **lipases**, as well as directions of future research in the area.

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ACCESSION NUMBER: 1999:802552 SCISEARCH
THE GENUINE ARTICLE: 246MN
TITLE: Computational analysis of chain flexibility and fluctuations in Rhizomucor miehei **lipase**
AUTHOR: Peters G H; Bywater R P (Reprint)
CORPORATE SOURCE: NOVO NORDISK AS, BIOSTRUCT GRP, DK-2760 MALOV, DENMARK (Reprint); NOVO NORDISK AS, BIOSTRUCT GRP, DK-2760 MALOV, DENMARK; TECH UNIV DENMARK, DEPT CHEM, DK-2800 LYNGBY, DENMARK
COUNTRY OF AUTHOR: DENMARK
SOURCE: PROTEIN ENGINEERING, (SEP 1999) Vol. 12, No. 9, pp. 747-754. Publisher: OXFORD UNIV PRESS, GREAT CLARENDON ST, OXFORD OX2 6DP, ENGLAND. ISSN: 0269-2139.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English

REFERENCE COUNT: 77

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We have performed molecular dynamics simulation of Rhizomucor miehei **lipase** (Rml) with explicit water molecules present. The simulation was carried out in periodic boundary conditions and conducted for 1.2 ns in order to determine the concerted protein dynamics and to examine how well the essential motions are preserved along the trajectory. Protein motions are extracted by means of the essential dynamics analysis method for different lengths of the trajectory. Motions described by eigenvector 1 converge after approximately 200 ps and only small changes are observed with increasing simulation time. Protein dynamics along eigenvectors with larger indices, however, change with simulation time and generally, with increasing eigenvector index, longer simulation times are required for observing similar protein motions (along a particular eigenvector). Several regions in the protein show relatively large fluctuations and in particular motions in the active site lid and the segments Thr57-Asn63 and the active site hinge region Pro101-Gly104 are seen along several eigenvectors. These motions are generally associated with glycine residues, while no direct correlations are observed between these fluctuations and the positioning of prolines in the protein structure. The partial opening/closing of the lid is an example of induced fit mechanisms seen in other enzymes and could be a general mechanism for the activation of Rml.

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ACCESSION NUMBER: 1998166989 EMBASE

TITLE: Interfacial activation of triglyceride **lipase** from Thermomyces (**Humicola**) **lanuginosa**: Kinetic parameters and a basis for control of the lid.

AUTHOR: Berg O.G.; Cajal Y.; Butterfoss G.L.; Grey R.L.; Alsina M.A.; Yu B.-Z.; Jain M.K.

CORPORATE SOURCE: M.K. Jain, Dept. of Chemistry and Biochemistry, University of Delaware, Physical Chemistry Unit, Barcelona, Spain

SOURCE: Biochemistry, (12 May 1998) 37/19 (6615-6627). Refs: 40 ISSN: 0006-2960 CODEN: BICHAW

COUNTRY: United States

DOCUMENT TYPE: Journal; Article

FILE SEGMENT: 029 Clinical Biochemistry

LANGUAGE: English

SUMMARY LANGUAGE: English

AB A strategy is developed to analyze steady-state kinetics for the hydrolysis of a soluble substrate partitioned into the interface by an enzyme at the interface. The feasibility of this approach to obtain interfacial primary kinetic and equilibrium parameters is demonstrated for a triglyceride **lipase**. Analysis for phospholipase A2 catalyzed hydrolysis of rapidly exchanging micellar (Berg et al. (1997) Biochemistry 36, 14512-14530) and nonexchangeable vesicular (Berg et al., (1991) Biochemistry 30, 7283-7291) phospholipids is extended to include the case of a substrate that does not form the interface. The triglyceride **lipase** (tlTGL) from Thermomyces (formerly **Humicola**) **lanuginosa** hydrolyzes p-nitrophenylbutyrate or tributyrin partitioned in the interface of 1-palmitoyl-2-oleoyl-sn-glycero-3-phosphoglycerol (POPG) vesicles at a rate that is more than 100-fold higher than that for the monodispersed substrate or for the substrate partitioned into zwitterionic vesicles. Catalysis and activation is not seen with the S 146A mutant without the catalytic serine-146; however, it binds to the POPG interface with the same affinity as the WT. Thus POPG acts as a diluent surface to which the **lipase** binds in an active, or 'open', form for the catalytic turnover; however, the diluent molecules have poor affinity for the active site. Analysis of the substrate and the diluent concentration dependence of the rate of hydrolysis provides a basis for the determination of the primary interfacial catalytic parameters. As a competitive substrate, tributyrin provided a check for the apparent affinity parameters. Nonidealities from the fractional difference in the molecular areas in interfaces are expressed as the area correction factor and can be interpreted as a first-order approximation for the interfacial activity coefficient. The basis for the interfacial activation of tlTGL on anionic interface is attributed to cationic R81, R84, and K98 in the 'hinge' around the 86-93

'lid' segment of tlTGL.

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ACCESSION NUMBER: 1998:424598 SCISEARCH
THE GENUINE ARTICLE: ZQ352
TITLE: Electrostatic steering and ionic tethering in enzyme-ligand binding: Insights from simulations
AUTHOR: Wade R C (Reprint); Gabdoulline R R; Ludemann S K; Lounnas V
CORPORATE SOURCE: EUROPEAN MOL BIOL LAB, MEYERHOFSTR 1, D-69117 HEIDELBERG, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (26 MAY 1998) Vol. 95, No. 11, pp. 5942-5949.
Publisher: NATL ACAD SCIENCES, 2101 CONSTITUTION AVE NW, WASHINGTON, DC 20418.
ISSN: 0027-8424.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 60
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB To bind at an enzyme's active site, a ligand must diffuse or be transported to the enzyme's surface, and, if the binding site is buried, the ligand must diffuse through the protein to reach it. Although the driving force for ligand binding is often ascribed to the hydrophobic effect, electrostatic interactions also influence the binding process of both charged and nonpolar ligands. First, electrostatic steering of charged substrates into enzyme active sites is discussed. This is of particular relevance for diffusion-influenced enzymes. By comparing the results of Brownian dynamics simulations and electrostatic potential similarity analysis for triose-phosphate isomerases, superoxide dismutases, and beta-lactamases from different species, we identify the conserved features responsible for the electrostatic substrate-steering fields. The conserved potentials are localized at the active sites and are the primary determinants of the bimolecular association rates. Then we focus on a more subtle effect, which we will refer to as ''ionic tethering.'' We explore, by means of molecular and Brownian dynamics simulations and electrostatic continuum calculations, how salt links can act as tethers between structural elements of an enzyme that undergo conformational change upon substrate binding, and thereby regulate or modulate substrate binding. This is illustrated for the **lipase** and cytochrome P450 enzymes. Ionic tethering can provide a control mechanism for substrate binding that is sensitive to the electrostatic properties of the enzyme's surroundings even when the substrate is nonpolar.

L15 ANSWER 35 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 1998:235371 SCISEARCH
THE GENUINE ARTICLE: ZC005
TITLE: A proposed architecture for lecithin cholesterol acyl transferase (LCAT): Identification of the catalytic triad and molecular modeling
AUTHOR: Peelman F; Vinaimont N; Verhee A; Vanloo B; Verschelde J L; Labeur C; SeguretMace S; Duverger N; Hutchinson G; Vandekerckhove J; Tavernier J; Rosseneu M (Reprint)
CORPORATE SOURCE: STATE UNIV GHENT, DEPT BIOCHEM, LAB LIPOPROT CHEM, HOSP STR 13, B-9000 GHENT, BELGIUM (Reprint); STATE UNIV GHENT, DEPT BIOCHEM, LAB LIPOPROT CHEM, B-9000 GHENT, BELGIUM; STATE UNIV GHENT, FAC MED, FLANDERS INTERUNIV INST BIOTECHNOL, DEPT BIOCHEM, B-9000 GHENT, BELGIUM; RHONE POULENC RORER, GENCELL, CARDIOVASC DEPT, VITRY SUR SEINE, FRANCE; UNIV COLL LONDON, DEPT BIOCHEM, LONDON, ENGLAND
COUNTRY OF AUTHOR: BELGIUM; FRANCE; ENGLAND
SOURCE: PROTEIN SCIENCE, (MAR 1998) Vol. 7, No. 3, pp. 587-599.
Publisher: CAMBRIDGE UNIV PRESS, 40 WEST 20TH STREET, NEW YORK, NY 10011-4211.
ISSN: 0961-8368.

DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 52

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The enzyme cholesterol lecithin acyl transferase (LCAT) shares the Ser/Asp-Glu/His triad with **lipases**, esterases and proteases, but the low level of sequence homology between LCAT and these enzymes did not allow for the LCAT fold to be identified yet. We, therefore, relied upon structural homology calculations using threading methods based on alignment of the sequence against a library of solved **three-dimensional** protein structures, for prediction of the LCAT fold. We propose that LCAT, like **lipases**, belongs to the alpha/beta hydrolase fold family, and that the central domain of LCAT consists of seven conserved parallel beta-strands connected by four alpha-helices and separated by loops. We used the conserved features of this protein fold for the prediction of functional domains in LCAT, and carried out site-directed mutagenesis for the localization of the active site residues. The wild-type enzyme and mutants were expressed in Cos-1 cells. LCAT mass was measured by ELISA, and enzymatic activity was measured on recombinant HDL, on LDL and on a monomeric substrate. We identified D345 and H377 as the catalytic residues of LCAT, together with F103 and L182 as the oxyanion hole residues. In analogy with **lipases**, we further propose that a potential ''lid'' domain at residues 50-74 of LCAT might be involved in the enzyme-substrate interaction. Molecular modeling of human LCAT was carried out using human pancreatic and Candida antarctica **lipases** as templates. The **three-dimensional** model proposed here is compatible with the position of natural mutants for either LCAT deficiency or Fish-eye disease. It enables moreover prediction of the LCAT domains involved in the interaction with the phospholipid and cholesterol substrates.

L15 ANSWER 36 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 1999:35611 SCISEARCH
THE GENUINE ARTICLE: 151MR
TITLE: Fluorescence study of fungal **lipase** from **Humicola lanuginosa**
AUTHOR: Stobiecka A (Reprint); Wysocki S; Brzozowski A M
CORPORATE SOURCE: TECH UNIV LODZ, INST GEN FOOD CHEM, STEFANOWSKIEGO 4-10, PL-90924 LODZ, POLAND (Reprint); UNIV YORK, DEPT CHEM, YORK YO1 5DD, N YORKSHIRE, ENGLAND
COUNTRY OF AUTHOR: POLAND; ENGLAND
SOURCE: JOURNAL OF PHOTOCHEMISTRY AND PHOTOBIOLOGY B-BIOLOGY, (SEP 1998) Vol. 45, No. 2-3, pp. 95-102.
Publisher: ELSEVIER SCIENCE SA, PO BOX 564, 1001 LAUSANNE, SWITZERLAND.
ISSN: 1011-1344.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 30

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Time-resolved and steady-state fluorescence quenching measurements have been performed to study two different conformations of the fungal **lipase** from **Humicola lanuginosa**. The intrinsic fluorescence of tryptophan Trp89 residue, located in the 'lid' region; has been used as a probe for the dynamics of protein. The native ('closed-lid') form of the enzyme has been found to decay as a triple exponential with time constants and relative contributions of 5.4 ns (74.3%), 2.2 ns (20.4%) and 0.4 ns (5.3%). A comparison of recovered decay parameters obtained for native and mutated H. lanuginosa **lipase** shows that Trp89 contributes about 61% to the class of emitting species with the lifetime of 5.4 ns: The fluorescence quenching data show that three out of four tryptophans (i.e., 117, 221 and 260 residues) within H. lanuginosa. **lipase** are totally quenchable by acrylamide while completely inaccessible to iodide. On the contrary, the Trp89 residue is available for both quenchers. Using steady-state iodide fluorescence quenching data and the fluorescence-quenching-resolved-spectra (FQRS) method, the total emission spectrum of the native **Lipase** has been decomposed into two spectral components. One of them, unquenchable by

iodide, has a maximum of fluorescence emission at 330 nm and the second one, exposed to the solvent, emits at 338. nm. The resolved spectrum of the redder component corresponds to the Trp89 residue, which participates in about 65% of the total H. lanuginosa emission: The dynamic Stern-Volmer quenching constants calculated for both native ('closed-lid') and inhibited ('open-lid') **lipase** are 2.71 and 4.49; M-1, respectively. The values obtained indicate that Trp89 is not deeply: buried in the protein matrix. Our results suggest that distinct configurations of fungal **Lipase** can be monitored using the fluorescence of the Trp89 residue located in the 'lid'-helix which participate's in an interfacial activation of the enzyme.

L15 ANSWER 37 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 1998:602521 SCISEARCH
THE GENUINE ARTICLE: 106NT
TITLE: Insights into the molecular basis for fatty acyl specificities of **lipases** from Geotrichum candidum and Candida rugosa
AUTHOR: Holmquist M (Reprint)
CORPORATE SOURCE: ROYAL INST TECHNOL, DEPT BIOCHEM & BIOTECHNOL, SE-10044 STOCKHOLM, SWEDEN (Reprint)
COUNTRY OF AUTHOR: SWEDEN
SOURCE: CHEMISTRY AND PHYSICS OF LIPIDS, (JUN 1998) Vol. 93, No. 1-2, pp. 57-66.
Publisher: ELSEVIER SCI IRELAND LTD, CUSTOMER RELATIONS MANAGER, BAY 15, SHANNON INDUSTRIAL ESTATE CO, CLARE, IRELAND.
ISSN: 0009-3084.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 49

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Despite immense progress in our comprehension of **lipase** structure and function during the past decade, the basis for **lipase** acyl specificities has remained poorly understood. This review summarizes some recent advances in the understanding at the molecular-level of substrate acyl recognition by two members in a group of large (M-w similar to 60 kDa) microbial **lipases**. Two aspects of acyl specificity will be focused upon. (1) The unique preference of a fungal Geotrichum candidum **lipase** for long-chain cis (Delta-9) unsaturated fatty acid moieties in the substrate. Mutational analysis of this **lipase** identified residues essential for its anomalous acyl preference. This information highlighted for the first time parts in the **lipase** molecule involved in substrate acyl differentiation. These results are discussed in the context of the 3D-structure of a G. candidum **lipase** isoenzyme and structures of the related Candida rugosa **lipase** in complex with inhibitors. (ii) The mechanism by which the yeast C. rugosa **lipase** discriminates between enantiomers of a substrate with a chiral acyl moiety. Molecular modeling in combination with substrate engineering and kinetic analyses, identified two alternative substrate binding modes. This allowed for the proposal of a molecular mechanism explaining how long-chain alcohols can act as enantioselective inhibitors of this enzyme. A picture is thus beginning to emerge of the interplay between **lipase** structure and fatty acyl specificity. (C) 1998 Elsevier Science Ireland Ltd. All rights reserved.

L15 ANSWER 38 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 1998:602518 SCISEARCH
THE GENUINE ARTICLE: 106NT
TITLE: Biochemical properties of staphylococcal (phospho) **lipases**
AUTHOR: Simons J W F A; Gotz F; Egmond M R; Verheij H M (Reprint)
CORPORATE SOURCE: UNIV UTRECHT, INST BIOMEMBRANES, CTR BIOMEMBRANES & LIPID ENZYMOL, DEPT ENZYMOL & PROT ENGN, NL-3508 TB UTRECHT, NETHERLANDS (Reprint); UNIV UTRECHT, INST BIOMEMBRANES, CTR BIOMEMBRANES & LIPID ENZYMOL, DEPT ENZYMOL & PROT ENGN, NL-3508 TB UTRECHT, NETHERLANDS; UNIV TUBINGEN,

TUBINGEN, GERMANY
COUNTRY OF AUTHOR: NETHERLANDS; GERMANY
SOURCE: CHEMISTRY AND PHYSICS OF LIPIDS, (JUN 1998) Vol. 93, No. 1-2, pp. 27-37.
Publisher: ELSEVIER SCI IRELAND LTD, CUSTOMER RELATIONS MANAGER, BAY 15, SHANNON INDUSTRIAL ESTATE CO, CLARE, IRELAND.
ISSN: 0009-3084.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 37
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Various staphylococci secrete **lipases** which require calcium ions for activity, and have profound preferences for substrates with different chain lengths. The **lipase** from Staphylococcus hyicus is exceptional since it has higher phospholipase than **lipase** activity. This paper gives an overview of the biochemical properties: of these enzymes. It appears that chain length selectivity of these enzymes resides in the acylation step. Interfaces mainly influence the acylation step. Calcium ions do not influence the rate of acylation or deacylation although stabilise the enzyme against denaturation. Molecular modelling based on the **X-ray** structure of Pseudomonas glumae **lipase** was used to construct a model of the staphylococcal **lipases**. With this model the position of serveral residues involved in stubstrate selectivity was predicted. Moreover, a sequence element could be assigned that may function as the so-called lid domain in staphylococcal **lipases**. Sequence alignment of four staphylococcal **lipases**, and **lipases** from P. glumae and Bacillus thermocatenulatus identified several potential calcium ligands, one of which was verified by site directed mutagensesis. It is concluded that stabilisation of **lipases** by calcium ions might be a more general phenomenon than recognized so far.

L15 ANSWER 39 OF 52 CAPLUS DUPLICATE 6
ACCESSION NUMBER: 1997:530455 CAPLUS
DOCUMENT NUMBER: 127:219945
TITLE: Endogenous natriuretic factors. 6: The stereochemistry of a natriuretic .gamma.-tocopherol metabolite LLU-.alpha.
AUTHOR(S): Kantoci, Darko; Wechter, William J.; Murray, E. David, Jr.; Dewind, Sally A.; Borchardt, Dan; Khan, Saeed I.
CORPORATE SOURCE: Laboratory of Chemical Endocrinology, Loma Linda University School of Medicine, Loma Linda, CA, USA
SOURCE: Journal of Pharmacology and Experimental Therapeutics (1997), 282(2), 648-656
CODEN: JPETAB; ISSN: 0022-3565
PUBLISHER: Williams & Wilkins
DOCUMENT TYPE: Journal
LANGUAGE: English

AB 2,7,8-Trimethyl-(S)-2-(.beta.-carboxyethyl)-6-hydroxy chroman (S-LLU-.alpha.) isolated from human uremic urine is apparently an oxidative side-chain degrdn. product of .gamma.-tocopherol. This compd. exhibits natriuretic activity in vivo and it appears to mediate the inhibition of the 70 pS K+ channel in the apical membrane of the thick ascending limb of the nephron. The stereochem. at the C-2 of LLU-.alpha. has been unequivocally established to be S(+) by **X-ray** crystallog. anal. of a diastereomeric amide deriv. It was also established that the chroman ring oxidn. of S-LLU-.alpha. proceeded without racemization at C-2. This finding can be extended to nonepimerization at C-2 of .alpha.-.delta.-tocopherols (Vitamin E) during side-chain oxidn. and stereospecificity (retention or inversion) of oxidative opening of the chroman ring. The resoln. of the enantiomers of the parent compd. and derivs. was accomplished by chiral high-performance liq. chromatog. The stereospecific enzymic hydrolysis by an array of com. available enzymes of the racemic Me ester of LLU-.alpha. was investigated. The **lipase** from **Humicola lanuginosa** appears to be the best enzyme for resoln. by selective hydrolysis of the racemic Me ester.

L15 ANSWER 40 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 97:258747 SCISEARCH
THE GENUINE ARTICLE: WP714
TITLE: Essential dynamics of **lipase** binding sites: The effect of inhibitors of different chain length
AUTHOR: Peters G H (Reprint); vanAalten D M F; Svendsen A; Bywater R
CORPORATE SOURCE: UNIV COPENHAGEN, HC ORSTED INST, DEPT CHEM 3, UNIV PK 5, DK-2100 COPENHAGEN O, DENMARK (Reprint); UNIV LEEDS, DEPT BIOCHEM & MOL BIOL, LEEDS LS2 9JT, W YORKSHIRE, ENGLAND; NOVO NORDISK AS, DK-2880 BAGSVAERD, DENMARK
COUNTRY OF AUTHOR: DENMARK; ENGLAND
SOURCE: PROTEIN ENGINEERING, (FEB 1997) Vol. 10, No. 2, pp. 149-158.
Publisher: OXFORD UNIV PRESS UNITED KINGDOM, WALTON ST JOURNALS DEPT, OXFORD, ENGLAND OX2 6DP.
ISSN: 0269-2139.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 50

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The biochemical activity of enzymes, such as **lipases**, is often associated with structural changes in the enzyme resulting in selective and stereospecific reactions with the substrate. To investigate the effect of a substrate and its chain length on the dynamics of the enzyme, we have performed molecular dynamics simulations of the native Rhizomucor miehei **lipase** (Rml) and **lipase** -dialkylphosophate complexes, where the length of the alkyl chain ranges from two to 10 carbon atoms. Simulations were performed in water and trajectories of 400 ps were used to analyse the essential motions in these systems. Our results indicate that the internal motions of the Rml and Rml complexes occur in a subspace of only a few degrees of freedom. A high flexibility is observed in solvent-exposed segments, which connect beta-sheets and helices. In particular, loop regions Gly35-Lys50 and Thr57-Asn63 fluctuate extensively in the native enzyme. Upon activation and binding of the inhibitor, involving the displacement of the active site loop, these motions are considerably suppressed. With increasing chain length of the inhibitor, the fluctuations in the essential subspace increase, levelling off at a chain length of 10, which corresponds to the size of the active-site groove.

L15 ANSWER 41 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 97:728178 SCISEARCH
THE GENUINE ARTICLE: BJ57Q
TITLE: Structure as basis for understanding interfacial properties of **lipases**
AUTHOR: Cygler M (Reprint); Schrag J D
CORPORATE SOURCE: NATL RES COUNCIL CANADA, BIOTECHNOL RES INST, 6100 ROYALMOUNT AVE, MONTREAL, PQ H4P 2R2, CANADA (Reprint)
COUNTRY OF AUTHOR: CANADA
SOURCE: METHODS IN ENZYMOLOGY, (15 SEP 1997) Vol. 284, pp. 3-27.
Publisher: ACADEMIC PRESS INC, 525 B STREET, SUITE 1900, SAN DIEGO, CA 92101-4495.
ISSN: 0076-6879.
DOCUMENT TYPE: General Review; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 58

L15 ANSWER 42 OF 52 MEDLINE on STN DUPLICATE 7
ACCESSION NUMBER: 97042947 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8888145
TITLE: The consequences of engineering an extra disulfide bond in the Penicillium camembertii mono- and diglyceride specific **lipase**.
AUTHOR: Yamaguchi S; Takeuchi K; Mase T; Oikawa K; McMullen T; Derewenda U; McElhaney R N; Kay C M; Derewenda Z S
CORPORATE SOURCE: Tsukuba Research Laboratories, Amano Pharmaceutical Co.

Ltd., Japan.
SOURCE: Protein engineering, (1996 Sep) 9 (9) 789-95.
Journal code: 8801484. ISSN: 0269-2139.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199705
ENTRY DATE: Entered STN: 19970514
Last Updated on STN: 19970514
Entered Medline: 19970506

AB The extracellular **lipase** from Penicillium camembertii has unique substrate specificity restricted to mono- and diglycerides. The enzyme is a member of a homologous family of **lipases** from filamentous fungi. Four of these proteins, from the fungi Rhizomucor miehei, **Humicola lanuginosa**, Rhizopus delemar and P. camembertii, have had their structures elucidated by X-**ray** crystallography. In spite of pronounced sequence similarities the enzymes exhibit significant differences. For example, the thermostability of the P. camembertii **lipase** is considerably lower than that of the H. lanuginosa enzyme. Since only the P. camembertii enzyme lacks the characteristic long disulfide bridge, corresponding to Cys22-Cys268 in the H. lanuginosa **lipase**, we have engineered this disulfide into the former enzyme in the hope of obtaining a significantly more stable fold. The properties of the double mutant (Y22C and G269C) were assessed by a variety of biophysical techniques. The extra disulfide link was found to increase the melting temperature of the protein from 51 to 63 degrees C. However, no difference is observed under reducing conditions, indicating an intrinsic instability of the new disulfide. The optimal temperature for catalytic activity decreased by 10 degrees C and the optimum pH was shifted by 0.7 units to more acidic.

L15 ANSWER 43 OF 52 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 97:66979 SCISEARCH
THE GENUINE ARTICLE: WB949
TITLE: The **lipase** from Staphylococcus aureus - Expression in Escherichia coli, large-scale purification and comparison of substrate specificity to Staphylococcus hyicus **lipase**
AUTHOR: Simons J W F A; Adams H; Cox R C; Dekker N; Gotz F; Slotboom A J; Verheij H M (Reprint)
CORPORATE SOURCE: UNIV UTRECHT, CTR BIOMEMBRANES & LIPID ENZYMOL, DEPT ENZYMOL & PROT ENGN, PADUALAAN 8, POB 80054, NL-3508 TB UTRECHT, NETHERLANDS (Reprint); UNIV UTRECHT, CTR BIOMEMBRANES & LIPID ENZYMOL, DEPT ENZYMOL & PROT ENGN, NL-3508 TB UTRECHT, NETHERLANDS; UNIV TUBINGEN, TUBINGEN, GERMANY
COUNTRY OF AUTHOR: NETHERLANDS; GERMANY
SOURCE: EUROPEAN JOURNAL OF BIOCHEMISTRY, (15 DEC 1996) Vol. 242, No. 3, pp. 760-769.
Publisher: SPRINGER VERLAG, 175 FIFTH AVE, NEW YORK, NY 10010.
ISSN: 0014-2956.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 44

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The genes coding for the mature part of the **lipases** from Staphylococcus aureus NCTC8530 and Staphylococcus hyicus have been cloned and overexpressed in Escherichia coli as fusion proteins with an N-terminal hexa-histidine tag. The enzymes accumulated in the cytoplasm and were purified using sequential precipitation with protamine sulphate and ammonium sulphate, followed by metal-affinity and hydroxyapatite chromatography. The yield of pure **lipase** was 4.5 mg/g wet cells for S. aureus **lipase** and 13 mg/g for S. hyicus **lipase**. The purified enzymes need calcium for activity, albeit with different affinities, and a low residual activity was found in the absence of calcium. In contrast to S. hyicus **lipase**, not only strontium but

also barium can replace calcium with full retention of activity of S. aureus **lipase**. Whereas S. hyicus **lipase** is optimally active at pH 8.5, the optimum pH for enzymatic activity for S. aureus **lipase** was found to be pH 6.5. The S. aureus **lipase** has a narrow substrate specificity: short-chain triacylglycerols and acyl esters of both p-nitrophenol and umbelliferone are readily degraded, whereas medium- and long-chain lipids, as well as phospholipids, are poor substrates. In contrast, S. hyicus **lipase** prefers phospholipids as substrate and hydrolyses neutral lipids irrespective of their chain length. The results are discussed in view of the large sequence similarity between both **lipases**.

L15 ANSWER 44 OF 52 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 1996:113975 BIOSIS
DOCUMENT NUMBER: PREV199698686110
TITLE: Contribution of cutinase serine 42 side chain to the stabilization of the oxyanion transition state.
AUTHOR(S): Nicolas, Anne; Egmond, Maarten; Verrips, C. Theo; De Vlieg, Jakob; Longhi, Sonia; Cambillau, Christian [Reprint author]; Martinez, Chrislaine
CORPORATE SOURCE: Lab. Cristallographic Cristallisation des Macromolecules Biol., URA1296-CNRS, IFR1, 31 Chemin J. Aiguier, 13402 Marseille cedex 09, France
SOURCE: Biochemistry, (1996) Vol. 35, No. 2, pp. 398-410. CODEN: BICHAW. ISSN: 0006-2960.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 12 Mar 1996
Last Updated on STN: 10 Jun 1997

AB Cutinase from the fungus Fusarium solani pisi is a lipolytic enzyme able to hydrolyze both aggregated and soluble substrates. It therefore provides a powerful toot for probing the mechanisms underlying lipid hydrolysis. Lipolytic enzymes have a catalytic machinery similar to those present in serine proteinases. It is characterized by the triad Ser, His, and Asp (Glu) residues, by an oxyanion binding site that stabilizes the transition state via hydrogen bonds with two main chain amide groups, and possibly by other determinants. It has been suggested on the basis of a covalently bond inhibitor that the cutinase oxyanion hole may consist not only of two main chain amide groups but also of the Ser42 O-gamma side chain. Among the esterases and the serine and the cysteine proteases, only Streptomyces scabies esterase, subtilisin, and papain, respectively, have a side chain residue which is involved in the oxyanion hole formation. The position of the cutinase Ser42 side chain is structurally conserved in Rhizomucor miehei **lipase** with Ser82 O-gamma, in Rhizopus delemar **lipase** with Thr83 O-gamma-1, and in Candida antartica B **lipase** with Thr40 O-gamma-1. To evaluate the increase in the tetrahedral intermediate stability provided by Ser42 O-gamma, we mutated Ser42 into Ala. Furthermore, since the proper orientation of Ser42 O-gamma is directed by Asn84, we mutated Asn84 into Ala, Leu, Asp, and Trp, respectively, to investigate the contribution of this indirect interaction to the stabilization of the oxyanion hole. The S42A mutation resulted in a drastic decrease in the activity (450-fold) without significantly perturbing the **three-dimensional** structure. The N84A and N84L mutations had milder kinetic effects and did not disrupt the structure of the active site, whereas the N84W and N84D mutations abolished the enzymatic activity due to drastic steric and electrostatic effects, respectively.

L15 ANSWER 45 OF 52 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 1994:544815 BIOSIS
DOCUMENT NUMBER: PREV199598004363
TITLE: Grease pit chemistry exposed.
AUTHOR(S): Rubin, Byron
CORPORATE SOURCE: Sterling Winthrop Pharm. Res. Div., Collegeville, PA 19426, USA
SOURCE: Nature Structural Biology, (1994) Vol. 1, No. 9, pp. 568-572.
DOCUMENT TYPE: Article
LANGUAGE: English

ENTRY DATE: Entered STN: 22 Dec 1994
Last Updated on STN: 22 Dec 1994

L15 ANSWER 46 OF 52 MEDLINE on STN DUPLICATE 8
ACCESSION NUMBER: 94302005 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8029211
TITLE: Current progress in crystallographic studies of new **lipases** from filamentous fungi.
AUTHOR: Derewenda U; Swenson L; Green R; Wei Y; Yamaguchi S; Joerger R; Haas M J; Derewenda Z S
CORPORATE SOURCE: Department of Biochemistry, University of Alberta, Edmonton, Canada.
SOURCE: Protein engineering, (1994 Apr) 7 (4) 551-7.
Journal code: 8801484. ISSN: 0269-2139.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199408
ENTRY DATE: Entered STN: 19940818
Last Updated on STN: 19990129
Entered Medline: 19940808
AB **Lipases** from filamentous fungi have been studied extensively over many years. They exhibit properties attractive for industrial applications, e.g. in laundry detergents, tanning and paper industries and stereospecific organic synthesis. Enzymes from the fungi Rhizomucor miehei and Geotrichum candidum have been among the first neutral **lipases** to be characterized structurally by **X-ray** diffraction methods. In this paper we report a preliminary account of crystallographic studies of three other fungal **lipases** homologous to that from R. miehei and obtained from **Humicola lanuginosa**, Penicillium camembertii and Rhizopus delemar. These newly characterized structures have important implications for our understanding of structure-function relationships in **lipases** in general and the molecular basis of interfacial activation.

L15 ANSWER 47 OF 52 MEDLINE on STN DUPLICATE 9
ACCESSION NUMBER: 94302004 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8029210
TITLE: Probing the nature of substrate binding in **Humicola lanuginosa lipase** through **X-ray** crystallography and intuitive modelling.
AUTHOR: Lawson D M; Brzozowski A M; Rety S; Verma C; Dodson G G
CORPORATE SOURCE: Department of Chemistry, University of York, UK.
SOURCE: Protein engineering, (1994 Apr) 7 (4) 543-50.
Journal code: 8801484. ISSN: 0269-2139.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199408
ENTRY DATE: Entered STN: 19940818
Last Updated on STN: 19990129
Entered Medline: 19940808
AB The catalytic triad of the neutral **lipase** from **Humicola lanuginosa** is buried by a short helix under aqueous conditions rendering the enzyme inactive. Upon adsorption to a lipid substrate interface this helix is displaced, thereby exposing the active site (interfacial activation). By covalently linking inhibitors to the active serine, it is possible to crystallize the enzyme in an interfacially activated state. Two such structures are reported here which mimic the tetrahedral transition states of lipolysis. To date, no **crystal** structures of a **lipase**--triglyceride complex exist for this enzyme. Therefore, possible interactions between this **lipase** and its substrate have been analysed through molecular modelling.

L15 ANSWER 48 OF 52 MEDLINE on STN DUPLICATE 10
ACCESSION NUMBER: 94284737 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8014587
TITLE: Conformational lability of **lipases** observed in the absence of an oil-water interface: crystallographic

studies of enzymes from the fungi **Humicola lanuginosa** and Rhizopus delemar.
AUTHOR: Derewenda U; Swenson L; Wei Y; Green R; Kobos P M; Joerger R; Haas M J; Derewenda Z S
CORPORATE SOURCE: Department of Biochemistry, University of Alberta, Edmonton, Canada.
SOURCE: Journal of lipid research, (1994 Mar) 35 (3) 524-34. Journal code: 0376606. ISSN: 0022-2275.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199407
ENTRY DATE: Entered STN: 19940810
Last Updated on STN: 19990129
Entered Medline: 19940726

AB Considerable controversy exists regarding the exact nature of the molecular mechanism of interfacial activation, a process by which most **lipases** achieve maximum catalytic activity upon adsorption to an oil water interface. **X-ray** crystallographic studies show that **lipases** contain buried active centers and that displacements of entire secondary structure elements, or "lids," take place when the enzymes assume active conformations [Derewenda, U., A. M. Brzozowski, D. M. Lawson, and Z. S. Derewenda. 1992. Biochemistry: 31: 1532-1541; van Tilbeurgh, H., M-P. Egloff, C. Martinez, N. Rugani, R. Verger, and C. Cambillau. 1993. Nature: 362: 814-820; Grochulski, P., L. Yunge, J. D. Schrag, F. Bouthillier, P. Smith, D. Harrison, B. Rubin, and M. Cygler. 1993. J. Biol. Chem. 268: 12843-12847]. A simple two-state model inferred from these results implies that the "closed" conformation is stable in an aqueous medium, rendering the active centers inaccessible to water soluble substrates. We now report that in **crystals** of the **Humicola lanuginosa** **lipase** the "lid" is significantly disordered irrespective of the ionic strength of the medium, while in a related enzyme from Rhizopus delemar, crystallized in the presence of a detergent, the two molecules that form the asymmetric unit show different "lid" conformations. These new results call into question the simplicity of the "enzyme theory" of interfacial activation.

L15 ANSWER 49 OF 52 MEDLINE on STN DUPLICATE 11
ACCESSION NUMBER: 2004394897 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 15299403
TITLE: Poly(ethylene) glycol monomethyl ethers - an alternative to poly(ethylene) glycols in protein crystallization.
AUTHOR: Brzozowski A M
SOURCE: Acta crystallographica. Section D, Biological crystallography, (1994 Jul) 50 (Pt 4) 466-8. Journal code: 9305878. ISSN: 0907-4449.
PUB. COUNTRY: Denmark
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-DATA-REVIEW; IN-PROCESS; NONINDEXED
ENTRY DATE: Entered STN: 20040810
Last Updated on STN: 20040810

AB Poly(ethylene) glycol monomethyl ethers (Peg-mmes) are a series of methyl substituted poly(ethylene) glycols that have been used with some success in the crystallization of a number of hydrophobic proteins. Crystallization of a **lipase** from **Humicola lanuginosa** complexed with the C12 substrate analogue from Peg-mme 5000, an endoglucanase 1 and a 59 kDa fragment of human topoisomerase IIalpha crystallized from Peg-mme are described. The use of Peg-mme for improving the quality of **crystals** previously grown from normal poly(ethylene) glycol 8000 is also described. We suggest that these modified Peg-mmes should be regularly used in screening for crystallization.

L15 ANSWER 50 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1995:29771 CAPLUS
DOCUMENT NUMBER: 122:4278
TITLE: The **three-dimensional** structures of two **lipases** from filamentous fungi

AUTHOR(S): Lawson, David M.; Brzozowski, Andrzej M.; Dodson, Guy G.; Hubbard, Rod E.; Huge-Jensen, Birgitte; Boel, Esper; Derewenda, Zygmunt S.
CORPORATE SOURCE: Department Chemistry, University York, York, Y01 5DD, UK
SOURCE: Lipases (1994), 77-94. Editor(s): Woolley, Paul; Petersen, Steffen B. Cambridge Univ. Press: Cambridge, UK.
CODEN: 60HHAW
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The **crystal** structure, conformation and properties of **lipase** from Rhizomucor miehei and **Humicola lanuginosa** are discussed.

L15 ANSWER 51 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:429842 CAPLUS
DOCUMENT NUMBER: 121:29842
TITLE: An unusual buried polar cluster in a family of fungal **lipases**
AUTHOR(S): Derewenda, U.; Swenson, L.; Green, R.; Wei, Y.; Dodson, G. G.; Yamaguchi, S.; Haas, M. J.; Derewenda, Z. S.
CORPORATE SOURCE: Dep. Biochem., Univ. Alberta, Edmonton, AB, T6G 2H7, Can.
SOURCE: Nature Structural Biology (1994), 1(1), 36-47
CODEN: NSBIEW; ISSN: 1072-8368
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The stability of globular proteins arises largely from the burial of non-polar amino acids in their interior. These residues are efficiently packed to eliminate energetically unfavorable cavities. Contrary to these observations, high resoln. **x-ray** crystallog. analyses of four homologous **lipases** from filamentous fungi reveal and .alpha./.beta. fold which contains a buried conserved constellation of charged and polar side chains with assocd. cavities contg. ordered water mols. It is possible that this structural arrangement plays an important role in interfacial catalysis.

L15 ANSWER 52 OF 52 MEDLINE on STN DUPLICATE 12
ACCESSION NUMBER: 2004394791 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 15299525
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AUTHOR: Brzozowski A M
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AB The fungal **Humicola lanuginosa lipase** complexed with the inhibitor n-dodecylphosphonate ethyl ester was crystallized in space group P2(1)2(1)2(1) with pseudotetragonal unit-cell parameters of a = 131.7 (2), b = 131.3 (1), c = 75.4 (1) A. 92% of **X-ray** diffraction data to 2.8 A resolution were collected with a final R(merge) = 8.5%. The **crystals** were grown using a new kind of precipitant - polyethylene glycol monomethyl ether (Peg-mme) of molecular weight 5000.

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